Vol. I

TRANSCRIPT OF RECORD

Supreme Court of the United States

OCTOBER TERM, [illegible]

No. [illegible]

ALBERT ATTORNEY GENERAL OF THE STATE OF [illegible], APPELLANT,

vs.

THE [illegible] COMPANY

APPEAL FROM THE DISTRICT COURT OF THE UNITED STATES FOR THE EASTERN DISTRICT OF [illegible]

FILED [illegible], 1915

(21,867)

(31,887)

SUPREME COURT OF THE UNITED STATES

OCTOBER TERM, 1926

No. 358

ALBERT OTTINGER, AS ATTORNEY GENERAL OF THE STATE OF NEW YORK, APPELLANT,

vs.

THE BROOKLYN UNION GAS COMPANY

APPEAL FROM THE DISTRICT COURT OF THE UNITED STATES FOR THE EASTERN DISTRICT OF NEW YORK

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IN UNITED STATES DISTRICT COURT, EASTERN DISTRICT OF NEW YORK

In Equity. No. 1269

THE BROOKLYN UNION GAS COMPANY, Plaintiff

against

WILLIAM A. PRENDERGAST, WILLIAM R. POOLEY, CHARLES Van Voorhis, Oliver C. Semple, and James A. Parsons, Constituting the Public Service Commission of the State of New York, and Carl Sherman, as Attorney General of the State of New York, Defendants

BILL OF COMPLAINT

To the Honorable the Judges of the District Court of the United States for the Eastern District of New York:

The Brooklyn Union Gas Company, a corporation organized under and by virtue of the laws of the State of [fol. 4] New York, having its place of business in the Borough of Brooklyn, City of New York, brings this its bill against Wiliam A. Prendergast, William R. Pooley, Charles Van Voorhis, Oliver C. Semple and James A. Parsons, constituting the Public Service Commission of the State of New York, and Carl Sherman, as Attorney General of the State of New York, and thereupon orator alleges and complains:

1. Orator is a corporation organized under and pursuant to the Transportation Corporations Law, being chapter 566, section 60, of the Laws of 1890, of the State of New York, on September 9th, 1895.

2. Defendants William A. Prendergast, William R. Pooley, Charles Van Voorhis, Oliver C. Semple and James A. Parsons constitute and are acting as The Public Service Commission of the State of New York, having been duly appointed under and pursuant to Chapter 480 of the Laws of 1910 which as amended, prescribes the powers and duties of the Commission with reference to orator and others,

These defendants are citizens of and reside in the State of New York and at least one of the defendants resides in the Borough of Brooklyn, City of New York, and within the Eastern District of New York.

3. Defendant Carl Sherman is Attorney General and a citizen of the State of New York and resides in the City of Buffalo.

4. In October and November, 1895, orator, pursuant to the Stock Corporation Law, being chapter 564 of the Laws [fol. 5] of 1890 of the State of New York, as amended, purchased the property, rights, privileges and franchises of The Nassau Gas Light Company, The Peoples Gas Light Company, Metropolitan Gas Light Company, The Williamsburgh Gas Light Company, The Brooklyn Gas Light Company, The Fulton Municipal Gas Company, The Citizens Gas Company.

5. The Brooklyn Gas Light Company was a corporation organized under and pursuant to chapter 204 of the Laws of 1825 of the State of New York and each of the other companies named in paragraph 4 was a corporation organized under and pursuant to chapter 37 of the Laws of 1848 of the State of New York.

6. Each of the corporations named in paragraph 4 had, prior to the purchase therein described, obtained the consent of the municipal authorities of the City of Brooklyn to lay conductors for conducting gas through the streets, lanes, alleys and squares in said city and each at the time of such purchase had constructed and owned mains and services in the streets and was engaged in the distribution and sale of gas, several having also constructed manufacturing plants in which gas was made and others purchasing the gas distributed and sold.

7. Orator issued, delivered and paid to the corporations mentioned in paragraph 4 in consideration of the sale to orator of said property, rights, privileges and franchises shares of the capital stock of orator of the par value of Fifteen million ($15,000,000) dollars and bonds of orator, se- [fol. 6] cured by a mortgage of its properties and franchises, of the par value of Ten million six hundred thousand ($10,600,000) dollars, which stock and bonds were

forthwith distributed to the stockholders of the said corporations. The authorized issue of such bonds amounted to a par value of Fifteen million ($15,000,000) dollars of which bonds of the par value of Ten million six hundred thousand ($10,600,000) dollars were issued, bonds of a par value of Three million nine hundred thousand ($3,900,000) dollars being reserved for the retirement when due of bonds of equal par value of the corporations named in paragraph II. Bonds so reserved of a par value of Two hundred sixty-four thousand ($264,000) dollars remain in the possession of orator for the purpose of such retirement.

8. Orator upon the consummation of the purchases described above forthwith took possession of the properties of the said corporations and has since manufactured, distributed and sold gas in the City of Brooklyn and Borough of Brooklyn, City of New York, in the exercise of its franchise.

9. Orator has issued, in addition to the securities described above, bonds of the class heretofore described in paragraph 7 secured by first mortgage on its property and franchises, of the par value of Five hundred thousand ($500,000) dollars and debenture bonds of the par value of Three million ($3,000,000) dollars, the latter convertible and subsequently converted at par into stock of orator. Orator has further issued debenture bonds of the par value of Seven million five hundred seventy-nine thousand ($7,579,-[fol. 7] 000) dollars also convertible into stock of orator, and first lien and refunding mortgage bonds of the par value of Six million ($6,000,000) dollars. The said mortgage and debenture bonds were in each instance issued in consideration of money, satisfaction of antecedent indebtedness and property in amount and value equal to the par value of said bonds.

10. Since the date of the purchase described in paragraph 4 orator has expended large sums of money in additions to and extensions of its buildings, plants and distribution system of mains, meters and services.

11. The authorized capital stock of orator is Thirty million ($30,000,000) dollars divided in three hundred thousand (300,000) shares of a par value of One hundred

($100) dollars each, of which one hundred eighty thousand (180,000) shares have been issued and are outstanding.

12. The incorporation of orator, the aforesaid acquisition of properties, rights, privileges and franchises, issuance of stock and bonds and undertaking to supply the inhabitants of Brooklyn with gas created and constitutes a contractual obligation between orator and the State of New York under which orator is bound to serve the public within the limits of its franchise territory and for such purposes make reasonable improvements and extensions and entitled to receive for such service a reasonable return upon the fair value of its property, and the State of New York may not, by virtue of the provisions of Article I, Section 10 of the Constitution of the United States of America, pass any law impairing the obligation of said contract.

[fol. 8] 13. Orator owns real and personal property used and useful in the manufacture, distribution and sale of gas in the Borough of Brooklyn, City of New York, of a fair value in excess of Seventy-two million two hundred twelve thousand one hundred and ninety-three ($72,212,193) dollars, together with intangible assets of great value, upon which it is entitled to earn a reasonable return over and above operating expenses.

14. On May 4, 1923, the legislature of the State of New York enacted an Act entitled "An Act to amend the Public Service Commission Law, in relation to the charge for illuminating gas in cities containing a population of one million or over," which was approved by the Governor of the State, June —, 1923, is known as Chapter — of the Laws of 1923 and provides as follows:

"§-a. Charge for gas in cities of one million or more. A gas corporation engaged in the business of manufacturing, furnishing or selling illuminating gas in a city containing a population of one million or over shall not charge or receive for gas furnished or sold in such city a sum per one thousand cubic feet in excess of one dollar, nor furnish in such city gas of a standard less than six hundred and fifty British Thermal Units per cubic foot, measured under normal conditions of temperature and atmospheric pressure. The public service commission, notwith-

standing any other provision of this chapter, shall not allow a rate or charge in the case of such cities in excess of such sum."

[fol. 9] 15. On May 13, 1921, the District Court of the United States for the Southern District of New York, Honorable Julius M. Mayer, District Judge, presiding, made and entered a decree in an action entitled "The Brooklyn Union Gas Company, complainant, against William A. Prendergast, William R. Pooley, Charles Van Voorhis, Oliver C. Semple and Charles G. Blakeslee, constituting the Public Service Commission of the State of New York; Charles D. Newton, as Attorney General of the State of New York, and Harry E. Lewis, as District Attorney of Kings County."

16. Thereafter defendants Newton and Lewis duly appealed from said decree to the Supreme Court of the United States, the decree was in all respects affirmed and the mandate of the Supreme Court of the United States dated March 27, 1922, entered in the district Court of the United States for the Southern District of New York on April 10, 1922.

17. In said action the complainant was orator, defendants Prendergast, Pooley, Van Voorhis and Semple were the defendants of the same names herein and were parties in the same capacity and defendant Newton was the predecessor in office of defendant Sherman and party in the same capacity.

18. The aforesaid action was in equity to restrain the enforcement of Chapter 125 of the Laws of 1906 of the State of New York, entitled "An Act in relation to illuminating gas in The City of New York and regulating the quality and pressure thereof and the price to consumers [fol. 10] other than said City and providing the penalty for violation," as amended, in so far as it forbade The Brooklyn Union Gas Company to charge or receive for gas manufactured, furnished or sold to consumers in the Borough of Brooklyn, City of New York, a sum per thousand cubic feet in excess of eighty (80c) cents.

19. The decree found that upon an investment greatly below the actual value of orator's property the return in

the year one thousand nine hundred eighteen was three and one-half (3½%) percent; that in the year One thousand nine hundred nineteen the return was Ninety-two hundredths of one (.092%) percent and that during the first ten months of the year One thousand nine hundred twenty there was an operating deficit of Four hundred eighty three thousand four hundred ninety four and twelve hundredths ($483,494.12) dollars which, for the purposes of the decree, the Court decreased in the amount of Twenty four thousand seven hundred sixty and eighty one hundredths ($24,760.81) dollars.

20. The decree declared the statute invalid as violative of the Constitution of the United States of America and enjoined and restrained the defendants, their successors in office and each and every person under them or either of them acting or purporting to act under any law of the State of New York from enforcing or attempting to enforce against orator the provisions of said statute, as amended, in so far as it limits the price to be charged for gas.

[fol. 11] 21. On May 14, 1921, orator duly filed with the Public Service Commission of the State of New York a schedule of rates providing a charge to consumers, other than The City of New York, of One and fifty hundredths ($1.50) dollars per thousand cubic feet of gas sold and charged and received this amount until August 1, 1921 on which date orator voluntarily reduced the rate to One and twenty-five hundredths ($1.25) dollars which rate orator charged and received until October 1, 1922. On or about May 20, 1921, the Public Service Commission of the State of New York, upon its own motion, instituted a proceeding entitled "Matter of gas rates in the City of New York and suburban territory (Case No. 79)" for the purpose of investigating the rates charged by gas corporations in the City of New York, including orator, their operating expenses, revenues, service, property and investment and thereafter on August 30, 1922, filed an opinion in this case setting forth its findings and conclusions and the reasons for the making and entry of orders prescribing a calorific standard for gas and rates to be charged by certain gas corporations, including orator, and upon the same day made and entered an order, wherein the said Commission fixed the just and

reasonable rates to be charged consumers other than The City of New York on and after October 1, 1922, and until September 30, 1923, and thereafter until the Commission should otherwise order, and the classifications of the service to be furnished to such consumers as follows:

1. First 100,000 cubic feet of gas per meter per month, $1.15 per thousand cubic feet.

[fol. 12] 2. Next 200,000 cubic feet of gas per meter per month, $1.10 per thousand cubic feet.

3. Next 300,000 cubic feet of gas per meter per month, $1.05 per thousand cubic feet.

4. Next 400,000 cubic feet of gas per meter per month, $1.00 per thousand cubic feet.

5. All over 1,000,000 cubic feet of gas per meter per month, $0.95 per thousand cubic feet.

Inasmuch as practically all of the gas sold by orator since the fixing of the above rates has been furnished to consumers using less than 100,000 cubic feet of gas per meter per month, the above scale of rates was adjusted by the Commission to yield orator approximately $1.1482 per thousand cubic feet of gas sold and such graduated scale of rates has in fact yielded orator a revenue approximating that amount. The Commission in its opinion further stated:

"Although the facts known to the Commission and confirmed by the analysis of exhibits in the conferences indicate that the rates now fixed by the Commission could hardly be deemed adequate if based only upon present conditions and present costs of manufacture, distribution, taxes, maintenance of property and return upon investment, the Commission feels confident that upon the greater stabilization of prices and the realization of certain prospective reductions in expense, the rates hereby put in force will approach the requirements of adequacy."

[fol. 13] Thereafter and on and about September 14th, 1922, orator notified the Commission in writing that the terms and conditions of the order were accepted and would be obeyed in a notification of acceptance in writing as follows:

"The Brooklyn Union Gas Company hereby acknowledges receipt of a copy of an order certified by the Secretary of the Commission to have been adopted by the Commission on August 30, 1922, in the above-entitled proceeding, prescribing the rates to be charged for gas by said Company to all of its consumers, other than The City of New York, and the classification of such service.

"The Brooklyn Union Gas Company hereby notifies the Commission that the said order of August 30, 1922, and the terms and conditions thereof are accepted and will be obeyed.

"This acceptance and statement of readiness to obey the said order dated August 30, 1922, is not intended as a concession by The Brooklyn Union Gas Company that the rates therein prescribed are adequate or reasonable or that such rates and classifications of service will yield a proper return upon the value of its property used and useful in its business.

"Such acceptance and statement of readiness to obey is not intended as a waiver of any right at any time in the future to claim a return upon the value of its property at the time or any other right which it may have with reference to rates past, present or future."

[fol. 14] 22. On or about May 20, 1921, in conjunction with the proceedings in the said Case No. 79, the Commission instituted a proceeding, upon its own motion, entitled, "Matter of standards of purity, illuminating power and heating power of gas, and standards for the measurement thereof in the City of New York and suburban territory (Case No. 108)" and on August 30, 1922, made and entered an order in said Case No. 108, wherein it found that the standard of 22 candle power theretofore prescribed by statute was unreasonable, uneconomical and improper and that the continuance of such a standard would not be in the public interest and that a standard of quality and measurement based upon the heating power of gas, as in said order more particularly specified, should be fixed and directed that on and after October 1, 1922, each gas corporation supplying manufactured gas in the Boroughs of Manhattan, Brooklyn, The Bronx, Queens and Richmond, comprising the City of New York, and in the franchise territory of the Queens Borough Gas and Electric Company in the County of Nas-

sau, should, in lieu of the existing standard or standards, furnish to its consumers a quality of gas which should comply with the requirements therein prescribed, including a requirement that under specified conditions such gas should have a total heating value on a monthly average of not less than five hundred thirty-seven (537) British thermal units per cubic foot and a daily average of not less than five hundred twenty-five (525) British thermal units per cubic foot on any three consecutive calendar days in any month, as is more fully set forth in the said order, and further directed that the order should take effect on the [fol. 15] date specified and continue in effect until changed, modified or abrogated by the Commission. Thereafter a certified copy of the said order in Case No. 108 having been served upon orator, orator on or about September 14, 1922, notified the Commission that the terms and conditions of the said order in Case No. 108 were accepted and would be obeyed.

23. Orator's acceptance of the order of the Commission in Case No. 79 was based and conditioned on the contemporaneous entry of the order in Case No. 108 and the continuance of the calorific standard therein fixed.

24. Said orders dated August 30th, 1922, and the rates, classifications and standard fixed therein were in force and effect on June —, 1923 when chapter — of the Laws of 1923 of the State of New York was approved by the Governor and orator has duly filed with the Commission and posted and published as required by law and order tariff schedules setting forth the rates, charges and classifications to be in force for service to be furnished by orator in accordance with the aforesaid orders of the Commission and has complied in all respects with the terms, provisions and conditions of said orders.

25. During the year ended December 31, 1922, the average price charged and received was $1.2241 per thousand cubic feet, which yielded a gross operating revenue, including sales of merchandise and residuals, of Seventeen million, two hundred one thousand, three hundred thirty-eight and sixty-five hundredths ($17,201,338.65) dollars; the cost of [fol. 16] manufacture and distribution, including taxes and operating expenses, was thirteen million one hundred

ninety-four thousand six hundred forty-two and seventy-five hundredths ($13,194,642.75) dollars or $.9520 per thousand cubic feet, leaving a net income of four million six thousand six hundred ninety-five and ninety hundredths ($4,006,695.90) dollars or a return of five and one-half (5½) per cent. on the fair value of orator's property as hereinbefore set forth.

26. Since September 30, 1922, the cost of labor and materials in the manufacture, distribution and sale of gas has not decreased and orator is informed, verily believes and therefore alleges will not decrease within a period of three years. Orator is informed, verily believes, and therefore alleges that the cost of manufacture and distribution of gas of the standard prescribed by chapter — of the Laws of 1923 of the State of New York will be in excess of seven ($.07) cents more per thousand cubic feet than the cost of manufacture and distribution of gas of the standard fixed by the said order of the Public Service Commission dated August 30, 1922. The source of such information and the grounds of such belief are the experience of orator and the opinion of persons qualified by reason of like experience and by the study of the science of political economy.

27. A return of eight (8%) per cent. per annum upon the fair value of the property of orator used and useful in the manufacture, distribution and sale of gas is a reasonable return and is the rate demanded and usually realized in [fol. 17] the locality where such property is located upon the present value of investments of a similar nature with due regard to the risk attending them. The amount of the value of property upon which Orator is entitled to earn a reasonable return is Seventy-two million two hundred twelve thousand one hundred ninety-three ($72,212,193) dollars and the amount required to be collected per thousand cubic feet, in order to obtain a return of eight (8%) per cent. thereon, is forty-two ($.42) cents per thousand cubic feet and in order to obtain a return of seven (7%) per cent. thereon is thirty-seven ($.37) cents per thousand cubic feet.

28. The rate of One ($1) dollar per thousand cubic feet of gas of a standard not less than six hundred fifty (650) British thermal units per cubic foot, prescribed by Chapter —

of the Laws of 1923 of the State of New York, since it became effective has deprived, does now and will deprive orator of a reasonable return on the fair value of its property used and useful in the manufacture, distribution and sale of gas as aforesaid and has not permitted, does not now and will not permit orator to earn a fair return thereon and is therefore in violation of Section 10 of Article 1 of the Constitution of the United States of America in that it is a law impairing the obligation of the aforesaid contract between orator and the State of New York and is and will be confiscatory and deprive orator of its property without due process of law and deny to orator the equal protection of the laws contrary to Section 1, Article XIV of the Articles in addition to and amendment of the Constitution of the United States of America.

[fol. 18] 29. Orator has taken the opinion of counsel, is advised, verily believes and therefore alleges that the Public Service Commission of the State of New York, since and by virtue of the enactment of Chapter — of the Laws of 1923, has no power to permit orator to increase the rate which orator may charge and receive for gas in excess of One ($1) dollar per thousand cubic feet; that orator also is forbidden by Chapter 480 of the Laws of 1910 of the State of New York, as amended, to make or demand any charge in excess of that allowed by law; and that under the provisions of said statute any violation of said statute, as amended, or failure to obey, observe or comply with an order of the Public Service Commission will subject orator to a penalty or forfeiture of One thousand ($1,000) dollars to the People of the State of New York for each and every violation as a separate offense. Should orator attempt to charge and collect a sum in excess of One ($1) dollar per thousand cubic feet for gas sold its consumers the aggregate of penalties and forfeitures so incurred would amount to such sum that the damage would be irreparable and destructive of orator's assets and property. Orator is therefore without adequate remedy at law for the redress of the wrong to which it is subjected by the provisions of said Chapter — of the Laws of 1923 of the State of New York.

30. Orator has approximately four hundred seventy-five thousand (475,000) consumers for whom it manufactures

and to whom it distributes and sells gas daily. The amount so distributed and sold during the year ending December 31, 1922, was 13,859,896,959 cubic feet. Many of orator's [fol. 19] consumers are financially irresponsible or temporary residents or both. Monthly bills are rendered by orator and unless paid the service and supply of gas to consumers in arrears is discontinued pursuant to law. Orator verily believes and therefore alleges that consumers would refuse to pay any charge in excess of One ($1) dollar upon the pretext that such charge constituted a complete defense to any claim against such consumers. Orator further verily believes and therefore alleges that it would, forthwith upon a discontinuance of service and supply to such consumers be subjected to a multiplicity of suits to compel the service and supply of gas or for the penalty prescribed by law for the refusal or neglect to supply gas as required and the damage to orator would be irreparable. Orator is therefore without adequate remedy at law for the redress of the wrong to which it is subjected by the provisions of said Chapter — of the Laws of 1923 of the State of New York.

31. The value of orator's property and business involved in this action greatly exceeds the sum of Three thousand ($3,000) dollars.

32. To the end that orator may have that relief which it can obtain only in a Court of Equity and that defendants may each answer the premises, but not under oath or affirmation, the benefit whereof orator hereby expressly waives, orator hereby prays:

1. That it be adjudged and decreed that Chapter — of the Laws of 1923 of the State of New York, entitled "An [fol. 20] Act to amend the public service commission law, in relation to the charge for illuminating gas in cities containing a population of one million or over," which became a law June —, 1923, is invalid as violative of the provisions of Section 10 of Article 1 of the Constitution of the United States of America and of Section 1, Article XIV of the Articles in addition to and amendment of the Constitution of the United States of America.

2. That it be adjudged and decreed that orator has no adequate remedy at law for the damage and injury which

will result from the enforcement of said act and that the same will be irreparable.

3. That orator be granted a writ of injunction, issuing out of and under the seal of this honorable Court, against defendants forever restraining them and each of them and each of their officers, agents, servants and employees, their successors in office and any and every person acting or purporting to act under or by virtue of the provisions of said Act of the Legislature of the State of New York, from in any way enforcing or attempting to enforce the provisions of said Act against orator or from instituting or prosecuting any action or proceeding at law or in equity, by summons, writ, petition, bill or otherwise for the purpose of compelling compliance with or inflicting or recovering any penalty, forfeiture or damage for non-compliance by orator with said Act.

[fol. 21] 4. That orator may have such other, further or different relief as may seem meet and the nature of the suit require.

5. That orator be granted a writ of subpœna ad respondendum issuing out of and under the seal of this honorable Court, directed to the defendants, commanding them and each of them, on a day certain and under a certain penalty to be therein inserted, to appear before this honorable Court and then and there full, true, direct and perfect answer make to all and singular the premises and further to stand, do, perform and abide by such further order and decree as to this honorable Court may seem meet.

And your orator will ever pray, etc.,

The Brooklyn Union Gas Company, by James H. Jourdan, President. Cullen & Dykman, Solicitors for Plaintiff, 177 Montague Street, Brooklyn, N. Y. William N. Dykman, of Counsel.

[fols. 22 & 23] *Duly sworn to by James H. Jourdan. Jurat omitted in printing.*

[fol. 24] IN UNITED STATES DISTRICT COURT

[Title omitted]

ANSWER OF DEFENDANT ATTORNEY GENERAL

The defendant, Carl Sherman, as Attorney-General of the State of New York, for his answer to the bill of complaint herein alleges:

First. Denies that he has any knowledge or information sufficient to form a belief as to each and every allegation contained in the paragraphs of the said bill of complaint marked and numbered "4," "5," "6," "7," "8," "9," "10," "11," "13," "23," "25," "26" and "30."

Second. That upon information and belief, the defendant denies each and every allegation contained in the paragraphs of the bill of complaint marked and numbered "12," "27," "28" and "29."

[fol. 25] Third. The defendant further answering the bill of complaint herein admits that a decree was entered in the United States District Court for the Southern District of New York, as alleged in paragraphs marked and numbered "19" and "20," and further admits that said decree enjoined and restrained the public officers of the State of New York, having the duty of enforcing the provisions of Chapter 125 of the Laws of 1906 from in any way attempting to enforce the same, the said act being adjudged confiscatory as to this plaintiff, but the said defendant denies that he has any knowledge or information sufficient to form a belief as to each and every remaining allegation contained in said paragraphs so marked and numbered.

Fourth. That the defendant admits that on or about the 20th day of May, 1921, the Public Service Commission of the State of New York instituted a proceeding as to the rates at which gas should be sold in The City of New York and suburban territory, and that concurrently the said Commission instituted a proceeding relative to standards of gas sold to consumers in said City, and that upon hearings being had upon these said proceedings the said Commission issued orders fixing a system of classified rates

as to said City and a standard of quality of gas known as a British Thermal Unit standard, which was under said order to have a daily average of not less than 525 British Thermal Units per cubic foot on any three consecutive calendar days in any month as alleged in the paragraphs of the bill of complaint marked and numbered "21" and "22," but the defendant denies that he has any knowledge or information sufficient to form a belief as to each and every remaining allegation contained in said paragraphs, except that he admits and affirmatively alleges that the Commission in fixing such standard of quality of gas to be furnished by the said plaintiff reduced the quality of [fol. 26] gas that had theretofore for a period of approximately twenty years existed in The City of New York and known as the 22 candle power standard, which the defendant is informed and verily believes had a calorific content of 650 British Thermal Units per cubic foot on the average, and the said defendant further alleges that the 22 candle power standard is a reasonable, proper and efficient standard of quality of gas for the great mass of consumers in said City, and is more efficient and honest in its service to said consumers than that described in the bill of complaint as 537 and 525 British Thermal Units per cubic foot.

Fifth. The defendant further answering the bill of complaint herein admits that Chapter 899 of the Laws of 1923, became effective on June 2, 1923, by the approval of the Governor of the State of New York as alleged in paragraph of the bill of complaint marked and numbered "24," but the defendant denies that he has any knowledge or information sufficient to form a belief as to each and every remaining allegation contained in the said paragraph so marked and numbered.

Sixth. That the defendant further answering the bill of complaint herein alleges affirmatively, upon information and belief, that the plaintiff does not practice reasonable economies in the purchase of its coal, gas oil and other materials purchased by plaintiff and used by it in the manufacture of gas; and the cheaper and more available forms of fuel may be obtained by such plaintiff at a substantial reduction in the present cost of manufacture of its product;

that, further, the said plaintiff does not keep its books of account in compliance with an order issued by the Public Service Commission which requires the said plaintiff to [fol. 27] keep such books in accordance with a system known as the "Uniform System of Accounts," and that by reason thereof and the inadequacy of the force of employees under the direction and control of the Public Service Commission, the said Commission and the public do not and cannot readily ascertain the cost to the said plaintiff of the manufacture and distribution of is product.

Seventh. That the defendant further answering the bill of complaint herein and in addition to the denials already interposed to paragraphs marked and numbered "22" and "25" thereof alleges affirmatively upon information and belief that the standard of quality of gas fixed by the said Public Service Commission and the rates concurrently fixed thereby together constitute an unreasonable charge for gas service in the City of New York, and that the said fixation, by reducing the quality of gas from that having a heat content of 650 British Thermal Units per cubic foot to that of 537 and 525 British Thermal Units per cubic foot, resulted and now results in making the cost of gas service to the consumer excessive, unreasonable and more than necessary to compensate the said plaintiff for its public service, as well as to pay all of its reasonable operating expenses, its taxes and to pay a fair return upon a fair valuation of the investment of the said plaintiff engaged in such public service.

Eighth. That the defendant further answering the bill of complaint herein and in addition to the denial already interposed to paragraph thereof marked and numbered "28" alleges affirmatively that the said rate of $1.00 per thousand cubic feet and the standard of quality of 650 Brit- [fol. 28] ish Thermal Units per cubic foot fixed by said Chapter 899 of the Laws of 1923 are valid, reasonable, and constitutional manifestations of the legislative power of the State of New York, do not in any way exclude the said plaintiff from the equal protection of the laws, nor is the said act in any respect whatsoever violative of any of the provisions of the Constitution of the United States. Further the defendant is informed and verily believes that the said fixation by the Legislature of the standard of quality of 650 British Thermal Units per cubic foot for gas sold in

The City of New York is exclusively within the scope of the legislative power of the State of New York, and cannot be the subject of any adverse determination by the judicial power of the Federal Government, and is beyond its jurisdiction or control.

Ninth. That the defendant further answering the bill of complaint herein alleges, upon information and belief, that the said plaintiff has made no experimentation with the rate and quality of gas fixed by the legislature of the State of New York in said Chapter 899 of the Laws of 1923 of said State, and has no information or knowledge upon which to base its conclusion, as set forth in the bill of complaint, as to the cost to it of the manufacture and distribution of gas [fol. 29] as required by the said statute.

Wherefore the defendant prays that the bill of complaint herein be dismissed with costs.

Carl Sherman, Attorney-General of the State of New York. James A. Donnelly, Solicitor for the Attorney-General of the State of New York.

Office and Post-Office address: 51 Chambers Street, Borough of Manhattan, New York City.

[fol. 30] IN UNITED STATES DISTRICT COURT

[Title omitted]

ANSWER OF DEFENDANTS WILLIAM A. PRENDERGAST ET AL., CONSTITUTING THE PUBLIC SERVICE COMMISSION

The above named defendants, William A. Prendergast, William R. Pooley, Charles Van Voorhis, Oliver C. Semple and James A. Parsons, constituting the Public Service Commission of the State of New York, by Ledyard P. Hale, their Solicitor, answer the Bill of Complaint herein as follows:

I

These defendants, answering Paragraphs 1, 2, 3, 4 and 5 of plaintiff's complaint, admit the allegations therein contained.

[fol. 31] II

These defendants, answering Paragraphs 6, 7, 8, 9, 10, 11 and 12 of plaintiff's complaint, are without knowledge as to the allegations therein contained, and therefore deny said allegations.

III

These defendants, answering Paragraph 13 of plaintiff's complaint, deny, upon information and belief, the allegations therein contained, and further deny that the fair and reasonable value of plaintiff's property used and useful in the manufacture, distribution and sale of gas in the Borough of Brooklyn, City of New York, and upon which it is entitled to a return, is $72,212,193.00, or any amount in excess of $36,291,581.48.

IV

These defendants admit the enactment of Chapter 899 of the Laws of 1923 as alleged in Paragraph 14 of plaintiff's complaint; and allege that on or about the 4th day of June, 1923, said Public Service Commission of the State of New York duly served on the plaintiff an order as follows:

[fol. 32] "STATE OF NEW YORK:

PUBLIC SERVICE COMMISSION

At a Session of the Public Service Commission Held in the City of Albany on the 4th day of June, 1923

Present: William A. Prendergast, Chairman; Charles Van Voorhis, Oliver C. Semple, James A. Parsons, Commissioners.

Case No. 1360

In the Matter of Rates to be Charged for Gas in the City of New York

The Commission having under consideration the provisions of Chapter 899 of the Laws of 1923 in relation to charges for gas in cities of over one million inhabitants;

Ordered: That each and every gas corporation engaged in the business of manufacturing, furnishing or selling

illuminating gas in the City of New York be and hereby is required forthwith to comply with such statute, and be and hereby is authorized to file and publish a new schedule of its rates for gas effective forthwith in accordance with said statute.

Further Ordered: That the Secretary serve by mail forthwith a copy of this order on every such gas corporation.

By the Commission.

(Signed) Harry M. Ingram, Acting Secretary." (Seal.)

V

[fol. 33] These defendants, answering Paragraphs 15, 16, 17, 18, 19, 20, 21, 22, 23 and 24 of plaintiff's complaint, admit, upon information and belief, the allegations therein contained, except these deefndants allege that said orders of the said Public Service Commission of August 30, 1922, prescribing classifications and rates to be charged for gas, as in plaintiff's complaints set forth, were based upon facts found by the Commission in its said investigations and hearings, and that the Commission found on the date each said order was made that the rates so fixed were just and reasonable rates to be charged by the plaintiff to its consumers in the Borough of Brooklyn, City of New York; and in the said opinion filed by the Commission contemporaneously with the making and entering of said orders, it was stated and determined by the Commission that said rates and classifications of service so fixed should be established to be effective for one year from the 1st day of October, 1922, and to continue in force until the 30th day of September, 1923, and thereafter until the Commission should otherwise order; and with the further exception that these defendants are without knowledge as to the amount of revenue per thousand cubic feet of gas sold which plaintiff now receives under the rates prescribed and fixed by said order of the Public Service Commission of August 30, 1922, referred to in plaintiff's complaint, and therefore deny the allegations respecting said revenue per thousand cubic feet of gas sold as set forth in said Paragraph 21.

VI

These defendants, answering Paragraphs 25, 26, 27, 28, and 30 of plaintiff's complaint, deny, upon information and belief, each and every allegation therein contained, and [fol. 34] allege that the gross operating revenues and operating expenses of plaintiff in the ended year December 31, 1922, or its net income for said year ended December 31, 1922, in no way indicate or measure the return hereafter to be earned by said plaintiff under said Chapter 899 of the Laws of 1923 of the State of New York

VII

These defendants, answering the allegations of Paragraphs 29 and 32 of plaintiff's complaint, deny that plaintiff can only obtain relief in a court of equity, and deny that the interposition of the power of a court of equity is necessary in any manner, or at all, to protect the alleged rights of plaintiff, or plaintiff's property herein, against any action which can be taken by these defendants under and pursuant to the statutes of the State of New York.

Wherefore, These defendants pray that the Bill of Complaint herein be dismissed with costs; and said defendants pray for such other relief in the premises as to this Honorable Court may seem meet and in accordance with equity.

Ledyard P. Hale, Solicitor for Defendants, 91 State Street, Albany, N. Y. Charles G. Blakeslee, Edward M. Deegan, Sherman C. Ward, of Counsel.

[fol. 35] In United States District Court

[Title omitted]

Order Appointing Special Master—October 11, 1923

Issue having been joined in this case by the filing of the answers of the above-named defendants and the plaintiff having moved upon the affidavit of Jackson A. Dykman, verified September 7, 1923, for the appointment of a Special Master herein.

Now on motion of Cullen & Dykman, solicitors for the plaintiff, it is

Ordered:

1. That Almet R. Latson be and he is hereby appointed Special Master to take the testimony and evidence upon the issues herein, make all needed computations and fully hear the facts and report to the Court his findings of fact [fols. 36 & 37] and conclusions of law, together with the evidence for the advisement of the Court; provided that nothing herein contained shall be construed as meaning that the Special Master's findings of fact shall be final, but only that he shall find the facts for the purposes of aiding the Court and making his recommendations. The Special Master shall, before submitting to this Court his final report, prepare and serve on the solicitors for the respective parties hereto a draft of such report.

2. W. G. Briggs is hereby appointed stenographer to take the testimony and evidence herein.

Marcus B. Campbell, U. S. D. J.

[fol. 38] In United States District Court

[Title omitted]

Opinion of the Special Master

This is a rate case. The plaintiff has filed its bill in equity seeking an adjudication declaring Chapter 899 of the Laws of 1923 of the State of New York unconstitutional and asking that the same be annulled and that enforcement thereof be restrained. Substantially all of the material allegations of the bill are put in issue by the answers.

[fol. 39] The Act of the Legislature thus challenged constitutes a new section of the Public Service Commission Law of the State of New York known as Section 67-A and is as follows:

"An act to amend the Public Service Commission Law in relation to the charge for illuminating gas in cities containing a population of one million or over.

"Section 1. Chapter 480 of the Laws of 1910, entitled 'An Act in relation to the Public Service Commission and the Transit Commission constituting Chapter 48 of the Consolidated Laws,' is hereby amended by inserting therein a new section, to follow Section 67, to be Section 67-A, to read as follows:

" '67-A. Charge for Gas in Cities of One Million or More.—A gas corporation engaged in the business of manufacturing, furnishing or selling illuminating gas in a city containing a population of one million or over shall not charge or receive for gas furnished or sold in such city a sum per 1,000 cubic feet in excess of one dollar, nor furnish in such city gas of a standard less than 650 British thermal units per cubic foot, measured under normal conditions of temperature and atmospheric pressure. The Public Service Commission, notwithstanding any other provision of this chapter, shall not allow a rate or charge in the case of such cities in excess of such sum.

" 'Section 2. This act shall take effect immediately.' "

The contention is predicated upon two theories in no wise co-related or interdependent, namely:

(A) That the statute impairs the obligation of a contract alleged to have been subsisting between the plaintiff and the State of New York at the time of its enactment and [fol. 40] therefore violates Section 10 of Article I of the Federal Constitution;

(B) That the statute would, if enforced, prove confiscatory, thus depriving the plaintiff of property without due process of law, and the same therefore violates Section 1, Article XIV of the Federal Constitution.

The Statutory Court has granted the relief sought pendente lite by way of interlocutory injunction entered on the 22d day of June, 1923, whereby the rates previously fixed by the Public Service Commission and in force at the time of the enactment in question are continued with appropriate provision with reference to the differential.

Appearances: For the plaintiff: Cullen & Dykman, Solicitors (William N. Dykman, Jackson A. Dykman, Timothy

J. Shea, of Counsel); for the defendants William A. Prendergast, William R. Pooley, Charles Van Voorhis, Oliver C. Semple, and James A. Parsons, constituting the Public Service Commission of the State of New York: Charles G. Blakeslee, Solicitor (Edward M. Deegan, Melvin L. Krulewitch, of Counsel); for the defendant Carl Sherman, as Attorney-General of the State of New York: James A. Donnelly, Solicitor (Clarence R. Cummings, Harry Hertzoff, of Counsel).

By an order of Honorable Marcus B. Campbell, United States District Judge, entered October 11, 1923, I have been appointed Special Master to take the testimony and evidence upon the issues herein, make all needed computations and report to the Court my findings of fact and conclusions [fol. 41] of law, together with the evidence, for the advisement of the Court.

Other corporations claiming to be similarly circumstanced filed bills of the same general nature and other orders were simultaneously entered appointing other special masters in these various cases.

At the suggestion of the Court an informal conference of the several special masters so appointed, together with counsel to all litigants in the several cases, was held on the 29th of October, 1923, to the end that an orderly procedure might be adopted. Later, on November 8, 1923, the result of this conference was presented to the Court for consideration and, after counsel for the various litigants had been heard, the Court directed that this cause proceed to trial on the 4th day of December, 1923, sitting two days a week for two weeks and thereafter sitting three days a week until concluded.

The initial session was held on the 3d day of December, instead of December 4th, at the request of counsel, and at their further joint request an adjournment was taken to December 10, 1923. Beginning upon that date I have held two sessions per week for two weeks and thereafter I have held three sessions per week with negligible exceptions as emergencies arose. These sessions consumed a full court day with the usual mid-day recess. The record consists of over six thousand printed pages, together with 310 plaintiff's exhibits and 187 defendants' exhibits. The final session was held on the 20th day of July, 1924. The case was thereupon submitted to me upon briefs of counsel, the last of which reached me on September 22, 1924. Upon the

[fol. 42] completion of my study a preliminary draft of my report and of this opinion was submitted to counsel for each of the parties litigant, pursuant to the requirements of the order of my appointment, and thereafter at the request of counsel I have been aided by oral argument. I have the honor herewith to file my report embodying my findings of fact and conclusions of law. In order that the Court may more readily apprehend the theory upon which I have approached this task, it has seemed the part of wisdom to somewhat analyze this voluminous record. To that end the essential facts established by the evidence may be here collated and certain propositions more or less fundamental thus be made available for consideration.

The plaintiff was incorporated in September, 1895, under the Transportation Corporations Law of the State of New York for the purpose of manufacturing and supplying gas in what is now the Borough of Brooklyn, City of New York. At that time the community in question, then the City of Brooklyn, was being served with gas by various corporations, among them the following seven, namely: The Nassau Gas Light Company, The Peoples Gas Light Company, The Metropolitan Gas Light Company, The Williamsburg Gas Light Company, The Brooklyn Gas Light Company, The Fulton Municipal Gas Company and The Citizens Gas Company. These corporations were in active competition, with the result that the territory served by one had been invaded by another and, in some instances, by others, so that in some streets two mains existed and in others three or even four. Competition took the form of what has been called a "rate war," the competing companies offering service at rates designed to attract patronage from a competitor (pp. 201-[fol. 43] 202). Plaintiff corporation seems to have been organized for the express purpose of acquiring the properties of these competing corporations. That purpose was consummated on the 4th day of November, 1895. The process was simple. The plaintiff purchased the assets of these several corporations. The purchase price consisted of stock and bonds of the newly organized plaintiff corporation. These purchases were preceded by appropriate resolutions of the board of directors of each corporation, and it would appear that a committee from the board of directors of each corporation made investigation and report, so that the pur-

chase price ultimately agreed upon was the result of negotiation (pp. 18 and 100, Exhibits 84 to 90 incl.). When these several transactions had been consummated, the vendor corporations were thereby divested of all assets, tangible and intangible except the bonds and the shares of stock of the plaintiff corporation which had been issued to them respectively as a purchase price. The plaintiff corporation, on the other hand, had become possessed of the tangible and intangible assets of these seven vendor corporations. Thereupon each of the vendor corporations distributed among its stockholders the stock and bonds received from the plaintiff corporation and each became an empty corporate shell without assets or liabilities, and as such ceased to function or exercise its corporate powers. From and after the 4th day of November, 1895, the plaintiff served the community with gas, and continues so to do.

A little more than a year after these transactions had been thus consummated, such proceedings were had before the Attorney General of the State of New York that actions were commenced in the name of the people to procure a decree dissolving each of these seven vendor corporations. [fol. 44] On the 10th day of December, 1896, there was entered in each action a decree dissolving the corporation therein defendant upon the ground of non-user in having failed to exercise its corporate powers for one year then last past and having disposed of all of its property and assets (p. 98). We may suspend the statement of facts at this point for the purpose of considering one of the contentions of the plaintiff which has been very earnestly urged upon its behalf and as earnestly combatted on behalf of the defendants.

Plaintiff contends that the franchise possessed by these several vendor corporations and which were so as aforesaid acquired by the plaintiff corporation should find a place among other assets of the plaintiff corporation used and useful in its business and that the fair value of the same should be included in arriving at a rate base for the purposes of this action.

It is urged by the learned counsel for the plaintiff that a franchise to occupy the public highways to the extent necessary to lay and maintain mains and services constitutes property which would survive the dissolution of the

corporation possessing the same, citing People vs. O'Brien, 111 N. Y., 1; that it is property, the acquisition of which will support the issue of capital stock, citing Rafferty vs. Buffalo City Gas Co., 37 App. Div., 618; that it is property which may be the subject matter of a special franchise tax under the Tax Law of the State of New York, citing People ex rel. Metropolitan Street Railway Co. vs. State Tax Commission, 199 U. S., 1. All this may be conceded, yet the general rule seems well established that despite the fact [fol. 45] that franchises are property for such purposes, no valuation upon the same should be included in the rate base beyond such amount as may have been paid for the same to the franchise granting power. (Spring Valley Water Works Co. vs. City of San Francisco, 192 Fed. Rep., 137; Cumberland T. & T. Co. vs. City of Louisville, 187 Fed. Rep., 637; Cedar Rapids Gas Light Co. vs. Cedar Rapids, 223 U. S., 655 [see p. 699]; Des Moines Gas Co. vs. Des Moines, 238 U. S., 153 [see p. 169;] Galveston Electric Co. vs. Galveston, 258 U. S., 388.)

Nowhere have I been able to find authority for the proposition that where a franchise obtained from the State shall have acquired great value as a result of its demonstrated earning power by way of operation thereunder, that in rate cases such a franchise, although property, may in turn be given a value consistent with such earning power for the purpose of asserting a constitutional obligation to protect a capitalization based thereon.

Plaintiff has shown by appropriate evidence that in these transactions a valuation was given to these several franchises and that the purchase price in stock and bonds paid by the plantiff for all property so acquired included that valuation. Plaintiff has further shown that immediately after acquiring these franchises, namely, November 4, 1895, same were entered upon their books as capital assets at a valuation of $3,050,000. Plaintiff called an expert witness who testified that, in his opinion, these franchises at that time had a value of $6,000,000, and that, in his further opinion, the valuation entered upon the books of the plaintiff was conservative (p. 4181; see Plaintiff's Exhibit 283). It is therefore argued that upon the sum at which these fran- [fol. 46] chises were valued in 1895 the plaintiff may now assert a right to return and, to that extent, that they fall

within the rule and should be allowed at the valuation thus ascertained. If there had been no such transfers and one of the vendor corporations, say the Nassau Gas Light Company, for example, were now before the Court as plaintiff in this action, it is clear that under the authorities cited above no such allowance would be made to it beyond the amount which it could show had been paid to the State or municipality for the franchise in question. I am unable to see how the plaintiff, as the grantee of the company which I have chosen for illustration is in any better position than its grantor. An assignee stands in the shoes of his assignor. A contrary view would lead to the conclusion that while the original recipient of a franchise from the State might not thus include its valuation for rate making purposes, beyond the amount paid for the franchise, yet, if only it can perfect a conveyance of that franchise, the grantee may include the same at whatever valuation can be established as of the date of conveyance. If such a view be sound, the rule is of little value and its effect is easily evaded.

The plaintiff, however, further contends that even though such a rule prevail, yet the transaction under which these franchises were acquired constitutes a "consolidation" analogous to that considered by the United States Supreme Court in Willcox vs. Consolidated Gas Co., 212 U. S., 19. In that case the record before the Court disclosed that the Consolidated Gas Company was incorporated under the laws of the State of New York in the year 1884; that shortly thereafter and in the same year the legislature of the State of New York enacted Chapter 367 of the Laws [fol. 47] of 1884, which authorized corporations engaged in manufacturing to consolidate; that the statute further permitted the issuance of capital stock by the consolidated corporation not "larger in amount than the fair aggregate value of the property, franchises and rights of the several companies thus to be consolidated"; that the statute further prescribed a means of ascertaining the fair aggregate value of those properties, franchises and rights, namely, through action of the directors of the various companies supplemented by the approval of the stockholders in each instance; that the Consolidated Gas Company of New York availed itself of this statute and six gas companies in the City of New York were consolidated into the Consolidated

Gas Company of New York; that as an incident of this consolidation the franchises and rights of the constituent companies received a valuation ascertained by the method prescribed in the statute amounting to $7,781,000; that capital stock of the consolidated corporation was issued accordingly; that in the following year, 1885, the legislature of the State of New York appointed a committee to investigate the capitalization of this corporation and concluded that this "state of facts cannot be called a violation of the law that expressly authorized it to be done unless such valuation was too high." The Supreme Court of the United States said:

"We think that under the above facts, the courts ought to accept the valuation of the franchises fixed and agreed upon under the Act of 1884 as conclusive at that time. The valuation was provided for in the act, which was followed by the company, and the agreement regarding it has always been recognized as valid, and the stock has been largely [fol. 48] dealt in for more than twenty years past on the basis of the validity of the valuation of the stock issued by the company."

The court however was at great pains to indicate that the allowance in this case was not to be interpreted as in any sense an invasion or abrogation of the general rule to the contrary. We quote:

"What has been said herein regarding the value of the franchises in this case has been necessarily founded upon its own peculiar facts, and the decision thereon can form no precedent in regard to the valuation of franchises generally, where the facts are not similar to those in the case before us. We simply accept the sum named as the value under the circumstances stated."

That the facts referred to by the Supreme Court render that case sui generis is a view generally adopted (Lincoln Gas & Electric Co. vs. City of Lincoln, 182 Fed. Rep., 926; Bronx Gas & Electric Co. vs. Public Service Commission, 190 A. D., 13; Georgia Railway & Power Co. vs. Railroad Commission, 278 Fed. Rep., 242), and the Supreme Court itself speaking through Mr. Justice Brandeis has stated:

"The allowance for the franchise made in Willcox vs. Consolidated Gas Co., 212 U. S., 19, 43, 44, 48, was rested on special grounds which do not exist in this case," Georgia Railway & Power Co. vs. Railroad Commission of the State of Georgia, 262 U. S., 652.

The statute to which the Supreme Court referred and under which the plaintiff corporation thus operated, namely, Chapter 367 of the Laws of 1884, was repealed by Chapters 563 and 567 of the Laws of 1890. It becomes important, [fol. 49] therefore, to note whatever points of differentiation as well as whatever points of analogy may be found when comparing the status of this plaintiff with the status of the Consolidated Gas Company as disclosed to the Supreme Court.

It is conceded that what was done was lawful and fully authorized by the statutes then in existence. At the time of the transaction in question one statute, Section 13 of Chapter 567 of the Laws of 1890 (Business Corporations Law), authorized a "consolidation" of such corporations, while another statute authorized a "merger,"—Section 40 of Chapter 564, Laws of 1890 (Stock Corporations Law), while still another statutory provision authorized a simple "purchase" by one corporation of the property, rights and franchises of another,—Section 33, Chapter 564, Laws of 1890 (Stock Corporations Law). In each transaction the statutes nominated different procedure and declared different rights. Under a "consolidation" of these seven corporations, the resultant would have been a new corporation entirely supplanting the seven thus consolidated. The result of a "merger" would have been the survival of one and the obliteration of the other six (Irvine vs. New York Edison Company, 207 N. Y., 475). In the procedure adopted by plaintiff it simply acquired by conveyance the property, franchises and rights of seven other corporations. When the transaction had been completed eight corporations survived. The survival of the seven vendor corporations is conclusively evidenced by the fact that the Attorney-General of the State of New York instituted an action in the name of the People of the State of New York to dissolve the same upon the ground of non-user, and these actions resulted in the familiar decree [fol. 50] of dissolution. The statute under which the plain-

tiff was operating described no method of procuring a valuation upon the franchises conveyed, nor did it authorize the issue of capital stock either to a specific amount or to an amount ascertainable through a nominated procedure, or for specific property, tangible or intangible. The transaction possessed no features other than a simple conveyance by one corporation to another. Whether or not a different situation would have been created had the plaintiff operated under the statutes authorizing "consolidation" or authorizing "merger" need not be considered. The fact remains that the corporations were not consolidated, nor were they merged. I note only one important feature where the analogy seems at all apparent, namely, in neither case was capital stock issued specifically for franchises acquired. We quote the conclusion of the Supreme Court in that regard with reference to Consolidated Gas Company:

"It is not, of course, contended there were special stocks issued for this particular item, but it was included in the total sum for which the Consolidated Company issued its stock, and upon its receipt the stockholders in the various companies surrendered their stock in those companies. The result was that the amount of the stock issued by the Consolidated was increased by $7,781,000, representing a value of franchises which was agreed upon by the stockholders of the company, and which had never cost any of them a single penny."

In the instant case substantially the same statement may be made, namely, that no capital stock of the plaintiff corporation was issued for the particular item of franchises and rights, but was included in the total sum for which [fol. 51] the plaintiff corporation issued its stock. The result was substantially the same, namely, that the amount of stock issued by the Brooklyn Union Gas Company was increased by an amount representing a value of franchises which was covered into the transaction and which, so far as the record discloses, had never cost any of the seven corporations a single penny. To this may be added the further fact that the stock so issued "has been largely dealt in for more than twenty years past on the basis of the validity of the valuation of the stock issued by the company."

In view of the precise limitations which the Supreme Court has thrown about its decision in the Consolidated Gas Company case and the strict construction which has since been given to that decision by other tribunals, and as a result of my own analysis of the situation, I am led to the conclusion that no authority exists to sustain the proposition that in the instant case a valuation of these franchises can be lawfully included in the items going to make up the rate base.

I now resume the statement of facts. Having thus acquired these properties, the plaintiff proceeded to exercise its corporate powers and franchise rights. At that time gas was used mainly for illuminating purposes. From time to time a minimum price of gas, together with an illuminating standard of purity, was prescribed by the appropriate authorities. Gradually the use of gas for illuminating purposes decreased and its use as fuel increased, with the result that at the time the statute under consideration was enacted an illuminating standard had been abandoned and a thermal standard substituted.

[fol. 52] In the meantime a public service commission had been created by the legislature of the State of New York and the plaintiff, among other utilities, had passed under the jurisdiction of that commission. In the year 1921 the Public Service Commission instituted an inquiry into rates and standards and such proceedings were had that on August 30, 1922, the Commission made its order fixing $1.15 per thousand cubic feet as the maximum price to be charged by the plaintiff (See Plaintiff's Exhibit 68), and its further order changing the standard of gas from an illuminating standard of 22 candle power to a minimum thermal standard of 537 British thermal units per cubic foot (See Plaintiff's Exhibit 80). These orders were made applicable to the plaintiff corporation and its subsidiary companies. By the terms of the order fixing the maximum price of gas at $1.15 per thousand cubic feet it was further provided that this price should remain in operation for a period of one year from October 1st, 1922. The evidence submitted by the plaintiff establishes the fact that after this order of the Commission had been made and before it came operative the intervening time was utilized for the purpose of adjusting the appliances used by the

consumers of gas as well as those used in the process of manufacture so as to produce gas of the thermal standard thus prescribed, and that this readjustment required the expenditure of substantial sums of money on the part of the plaintiff. While these orders of the Public Service Commission were in full force and effect and before the expiration of the year prescribed by the order fixing the maximum price of gas, namely, in the month of May, 1923, the legislature passed the statute in question. The statute [fol. 53] became a law on the 2d day of June, 1923, and contained the provision that it should take effect immediately.

It is this phase of the situation upon which plaintiff predicates its contention that at the time the statute in question was enacted these orders of the Public Service Commission, together with the acceptance thereof by the plaintiff, and the expenditure of moneys in reliance thereupon, constituted a contract between the plaintiff corporation and the State of New York, the obligation of which contract has been violated by the statute in question. Manifestly if the contention of the plaintiff be correct, it would become unnecessary for the Court to determine whether or not the statute was confiscatory, although under the terms of the order of appointment the special master is required to consider and report upon that contention.

The regulation of rates to be charged by a public utility is concededly an exercise of the police power of the State, "customary in England from time immemorial, and in this country from its first colonization." (Munn vs. People of Illinois, 94 U. S., 124.)

It is equally authoritative that "a legislature cannot bargain away the police power, nor in anywise withdraw from its successors the power to take appropriate measures to guard the safety, health and morals of all who may be within their jurisdiction." (Texas & N. O. R. Co. vs. Miller, 221 U. S., 408.)

It follows that "Regulations regarding rates which municipalities may impose in granting licenses or permission [fol. 54] to use its streets by public service corporations cannot be said to form contracts beyond the inherent police power of the legislature to modify for the public welfare." These regulations therefore "may modify without impair-

ing the obligation of a contract within the provisions of the Constitution." (People ex rel Village of South Glens Falls vs. Public Service Commission, 225 N. Y. 216.)

The same doctrine has been differently expressed but substantially to the same effect: "Contracts must be understood as made in reference to the possible exercise of the rightful authority of the Government, and no obligation of the contract can extend to defeat the legitimate government authority." (Union Dry Goods Company vs. Georgia Public Service Corporation, 238 U. S. 372.) "The State, acting through the legislature, has, by virtue of its police power, the right to regulate the fare to be charged by a street surface railroad corporation. This right or power, whichever it may be called, is an attribute of state sovereignty. It is something which the State cannot sell or give away, either in whole or in part. It is a power which underlies the Constitution and is predicated upon the law of necessity. It belongs to the State because it is sovereign, and is a necessity for the existence of the Government. It is something the State cannot surrender, because to do so would be to surrender a sovereign power. It is as enduring and indestructible as the State itself." (People vs. Adirondack Railway Company, 106 N. Y., 225.)

Or again, "All contracts and property rights are held subject to the fair exercise of this power, which embraces, [fol. 55] among other things, regulations designed to promote public convenience and general welfare, as well as those in the interest of the public health, morals and safety." (Chicago & Alton Railroad Co. vs. Tranbarger, 238 U. S., 67.)

This is clearly the well established law, and in the case last cited was summarized as follows with reference to these same constitutional questions:

"It is established by repeated decisions of this Court that neither of these provisions of the Federal Constitution has the effect of overriding the power of the State to establish all the regulations reasonably necessary to secure the health, safety or general welfare of the community; that this power can neither be abdicated nor bargained away and is inalienable even by express grant; in fact, all

contracts and property rights are held subject to its fair exercise." (Atlantic Coast Line vs. Goldboro, 232 U. S., 548, 558, and cases cited.)

Within this area and subject to such limitation, it was competent for the State to empower the public service commission to contract on its behalf. The extent to which the public service commission was as matter of fact thereunto authorized will appear from an examination of the statute creating that commission and the amendatory acts, Chapter 48 of the Consolidated Laws.

The commission is a regulatory body and the authority to contract on behalf of the State will not be implied but must be found in some express grant. (Milwaukee Electric Railway & Lighting Co. vs. Railway Commission of Wisconsin, 238 U. S., 174.)

"Surrender, by contract, of a power of government though in certain well defined cases it may be made by legis- [fol. 56] lative authority is a very grave act, and the surrounding conditions, as well as the authority to make it, must be closely scrutinized." (Home Telephone & Telegraph Co. vs. Los Angeles, 211 U. S., 265.)

As originally enacted, the Public Service Commission Law created a commission and prescribed "general provisions" with reference to the jurisdiction, power and procedure of that commission. One of those general provisions (Section 22) states that after an order has been made by the commission, any person interested shall have the right to apply for a rehearing "in respect to any matter determined therein."

This section further provides, "If, after such rehearing and a consideration of the facts, including those arising since the making of the order the commission shall be of the opinion that the original order or any part thereof is in any respect unjust or unwarranted, or should be changed, the commission may abrogate or change the same." After these "general provisions," the statute contains specific provisions relating to the various classes of corporations committed to the jurisdiction of the commission, and among others "Provisions relating to gas and electrical corporations; regulation of price of gas and electricity." By Section 65 it was provided that all charges made by any gas

corporation for gas shall be reasonable and not more than allowed by law or by order of the commission. By Section 66 it is provided that, "The commission shall have power by order to fix and change from time to time standards of the purity, illuminating power, and heating power, and standards for the measurement thereof, of gas to be manufactured, distributed or sold." By Section 72 the commission was empowered to fix just and reasonable prices, rates [fol. 57] and charges for gas. Then follows the provision that, "The price fixed by the commission under this section * * * shall be the maximum price to be charged * * * for gas * * * within the territory and for a period to be fixed by the commission in the order, not exceeding three years, except, etc., etc. * * *."

Acting under authority of these sections, two orders were made by the Public Service Commission on the 30th day of August, 1922, one fixing the price to take effect October 1st, 1922, and to "continue in force until September 30th, 1923, and thereafter until the Commission shall otherwise order," (Plff's Ex. 68) and the other establishing the standard to take effect October 1st, 1922, and to "continue in effect until changed, modified or abrogated by this Commission." (Plff's Ex. 80.)

In the month of May, 1923, and while these orders were in full force and effect, the legislature passed the statute in question, amending the Public Service Commission Law, by adding a section to be known as 67-A, whereby the plaintiff was forbidden to charge or receive more than $1.00 per thousand cubic feet of gas furnished to its consumers and was further forbidden to furnish to its consumers gas of a standard less than 650 British thermal units per cubic foot. The statute had conferred no authority upon the Commission to establish a standard of purity "for a period to be fixed by the commission in the order, not exceeding three years, etc." The power in this regard was expressly limited to the fixation of a price, although as above stated the statute in another section conferred upon the commission power to regulate the standard of purity by appropriate order from time to time.

[fol. 58] The commission therefore appears to have been empowered by the legislature to make orders establishing a maximum price during a period not exceeding three years

and other orders fixing a standard of purity from time to time; both classes of orders, however, to remain subject to abrogation or change upon a rehearing. The situation created by the order fixing the price for one year has been aptly described as a "period of repose" (Village of Saratoga Springs vs. Saratoga Gas, etc., Co., 191 N. Y., 123), subject to disturbance by the legislature or by the commission. The late Chief Judge Cullen seems to have so viewed the status thus created. A predecessor statute was under consideration, held unconstitutional on other grounds, but containing this identical provision. The Court there said, "We have no difficulty in upholding the provision that the rate shall remain as established for the term of three years," but this statement is qualified by the further statement that it was doubtless true that "if the legislature had itself fixed rates, such rates would be permanent until the statute enacting them had been modified or repealed." The fact that the "period of repose" was prescribed by an agent of the State thereunto duly authorized, in no wise differentiates the situation from one where such a "period of repose" might have been prescribed directly through legislative enactment.

By competent evidence the plaintiff established that when this "period of repose" was ordered by the Commission, substantial sums of money were expended in reliance upon its continuance, whereby appliances were adjusted to the new requisition of the Commission. The learned counsel for the plaintiff urged the argument that the State has [fol. 59] thus become estopped from prescribing a new standard before the expiration of the allot-ed period. It would seem a sufficient answer to point to the power of repeal vested in the legislature and to the power of abrogation or change reserved to the Commission. A further and more fundamental answer, however, is found in Boston Beer Co. vs. Massachusetts, 97 U. S. 25. Legislation may have the practical effect of rendering a given investment valueless, but no contract is thereby impaired.

"A common carrier cannot by making contracts for future transportation or by mortgaging its property or pledging its income prevent or postpone the exertion by the state of the power to regulate the carrier's rates and practices, nor does the contract clause of the constitution

interpose any obstacle to the exertion of that power." (Producers Transportation Co. vs. Railroad Commissioners, 251 U. S. 228.)

We may note in passing that the expense referred to by the plaintiff was occasioned by the change of standard, as to which no "period of repose" had ever been prescribed or authorized. Such a grant of power from the State to its commission being in derogation of sovereign rights, must be subjected to strict construction.

Nor have I been impressed with the argument that "acceptance" of the order of the Public Service Commission operated in some sense to consummate a contract with the State. "Acceptance" of an order of the Commission is provided for by Section 23 of the statute, but seems nothing more than a requirement that the utility affected by an order of the Commission shall, within the prescribed time, indicate whether or not it will content the order in [fol. 60] the courts. A declaration that the order is accepted cannot give to that order any greater binding force upon the State than the order itself inherently possesses whether accepted or protested.

If there be a contract, it must be found within the four corners of this order and this acceptance.

The order of the Commission dated August 30, 1922 (Plaintiff's Exhibit No. 68), after prescribing the rates, states:

"That this order shall take effect October 1, 1922, and shall continue in force until September 30th, 1923, and thereafter until the Commission shall otherwise order."

But this provision is qualified by the succeeding paragraph, namely:

"Further Ordered that this order shall be without prejudice to the right of any interested party to apply to the Commission for a continuance of the hearings in these proceedings for the purpose of presenting the evidence relating to the subject matter of this order."

When plaintiff "accepted" this order (Plaintiff's Exhibit No. 79) that acceptance was qualified. The plaintiff notified the Commission "that the said order of August 30, 1922, and the terms and conditions thereof are accepted and will be obeyed," but then proceeded to say that—

"This acceptance and statement of readiness to obey the said order dated August 30th, 1922, is not intended as a concession by the Brooklyn Union Gas Company that the rates therein prescribed are adequate or reasonable or that such rates and classifications of service will yield a proper return upon the value of the property, used and useful, in its business. Such acceptance and statement of readiness to obey is not intended as a waiver of any right at [fol. 61] any time in the future to claim a return upon the value of its property at the time or any other right which it may have with reference to the rates, past, present or future."

Thus the Commission made its order, reserving the right given it by statute to alter, modify or abrogate the same, and the plaintiff accepted the order without waiving its right to challenge the validity thereof. I cannot read into this order and this acceptance such a meeting of the minds by way of mutual covenant between the State and the utility as would even purport to constitute a contract. Each side reserved the right to recede from the provisions of the order.

These views have led to the conclusion that the statute in question does not violate Section 10 of Article 1 of the Constitution.

I have studied the opinion of the United States District Court for the Southern District of New York in New York and Queens Gas Company vs. Prendergast, et al. Judge Winslow there reaches a different conclusion. The Special Master indulges the hope, however, that in the expression of these views for the guidance of the Court he may not seem guilty of impropriety, much less of judicial insubordination.

With the greatest deference to that learned Court, may I be permitted to add that the authority these cited, Mobile Gas Co. vs. Paterson, 293 Fed. Rep., 208, seems capable of being distinguished from the case at bar. In the instant case we confront the task of ascertaining to what extent, if at all, the State may contract away the exercise of its inherent police power. In the cited authority the State [fol. 62] had devised a method by which an issuable allegation of fact (namely, the value of property upon a given day) might be established by contract—by appraisal—by

choosing arbiters, in order that the State might thereafter freely exercise these same police powers. That which was there sustained would not in theory or substance be different from a stipulation in the instant case whereby the litigants fixed a valuation of plaintiff's property as of the 1st day of June, 1923, and consented to an adjudication based thereon. In that case the State had extended an invitation to public utilities to permanently resolve such an issue by adopting a prescribed course of procedure, and had nominated the consideration which the utility must pay as a condition of acceptance. It was held that when the utility had accepted the offer of the State and had paid the consideration and a valuation had been determined, thereupon a contract had been consummated which the State had no power to impair. The contract there sustained, however, was not a contract establishing a rate but rather a contract establishing the valuation of certain property upon a certain date for future rate making purposes.

It was in these circumstances that the present litigation was instituted. The plaintiff has made no attempt to comply with the statute. Immediately all operations thereunder were suspended by an injunction issued out of this Court upon motion of the plaintiff. The defendants urge that the plaintiff should not be heard with reference to the alleged confiscatory nature of this statute until by actual operation thereunder it shall be made possible to demonstrate the facts and figures upon which such a contention must rest. In support of this view reliance is placed upon the decision of the Supreme Court (Willcox vs. Consolidated Gas Co., [fol. 63] 212 U. S. 19), where the constitutionality of Chapter 125 of the Laws of 1906, known as the 80-Cent Gas Law, was similarly challenged. The Court denied the relief sought without prejudice to the institution of a new action should the result of experience indicate necessity therefor. In so doing, however, the Court said:

"Of course there may be cases where the rate is so low upon any reasonable basis of valuation that there can be no just doubt as to its confiscatory nature, and in that event there should be no hesitation in so deciding and enjoining its enforcement without waiting for the damage which must inevitably accompany the operation of the business under the objectionable rate."

The plaintiff has undertaken to bring itself within that phase of the rule. At the time the statute in question became operative, June 2nd, 1923, plaintiff was providing gas of 580 B. T. U., which had been the average thermal content of its gas since May 15th, 1923, as tested at the works. Evidence has been produced to establish the actual cost of furnishing that gas, and it is plaintiff's contention that the price prescribed by this statute, $1.00 per thousand cubic feet, would yield an insufficient return for even that standard of gas. Evidence has been submitted to establish the additional cost which would be involved in furnishing gas of 650 British thermal units. Plaintiff thus contends that the alleged confiscatory nature of this statute may be considered as a result of experience. Fully recognizing the reluctance of courts to declare a statute of this character confiscatory until experimentation has first been had (Municipal Gas Co. vs. Public Service Commission, 225 N. Y., 89; [fol. 64] Kings County Lighting Co. vs. Newton, et al., 268 Fed. Rep. 143), yet the Supreme Court in the language which is quoted from Willcox vs. Consolidated Gas Company recognizes that an exceptional situation may possibly exist. I think the plaintiff has brought itself within the rule.

This is not the sole contention, however, upon which the plaintiff rests its right to be heard without passing through a "test period." By appropriate evidence plaintiff has shown that the appliances utilized by its consumers at the time the statute in question was enacted had been adjusted to conform to the requirements of the order issued by the Public Service Commission on the 30th day of August, 1922, which, by its terms, went into effect October 1, 1922. Between the date of the order, August 30th, and the date when it became effective, October 1st, plaintiff made the adjustments in question. It is made clear by the evidence that the proposed standard prescribed by the Act in question would require a readjustment of these same appliances, utilized by the consumers; that such a readjustment, even with the greatest diligence, could not be effected at once; and that to supply consumers with gas of 650 British thermal units without first readjusting the appliances of the consumers to utilize the same would endanger the health, if not the life, of the community, through

the escape of a noxious product of combustion, carbon monoxide, an odorless but deadly gas. Counsel for plaintiff, therefore, urges that this state of facts alone (uncontradicted) renders a test period, in itself, a menace to the community. The construction of this statute has been very sharply litigated. Inasmuch, however, as the plaintiff has [fol. 65] brought itself within the rule laid down by the Supreme Court, as previously stated, we may pass to a consideration of the evidence tending to establish the alleged confiscatory feature of the statute and revert to the question of statutory construction in the light of the conclusions reached upon that issue.

For the purposes of this action I deem it the province of the Court to ascertain the "fair value" of the property used and useful by the plaintiff in serving the public. It has been my aim to be governed by the doctrine enunciated by the United States Supreme Court in Smythe vs. Ames, 169 U. S., 546, as that doctrine has been amplified and applied in later cases. We have been admonished through these adjudications that the company is entitled to a fair return upon the fair value of the property at the time it is being used for the public; that the determination arrived at must be a reasonable judgment having its basis in a proper consideration of all relevant facts; that it would be erroneous to adopt a valuation based upon replacement costs less depreciation to the exclusion of other relevant facts; that there is no rule requiring slavish adherence to cost of reproduction less depreciation; that appropriate weight is to be given to any enhanced cost of material, labor, supplies, etc., over those prevailing at the time of acquisition or construction; and that the rule in Smythe vs. Ames as interpreted and employed means merely that all must be considered, no one element to the exclusion of all others. (Minnesota Rate Cases, 230 U. S. 434; San Diego Land & Town Co. vs. National City, 174 U. S., 757; Willcox vs. Consolidated Gas Co., 212 U. S., 19; State of Missouri ex rel. Southwestern Bell Telephone Company vs. Public Service Commission, 262 [fol. 66] U. S. 276; Bluefield Water Works Improvement Co. vs. Public Service Commission, 262 U. S., 679; Georgia Railway & Power Co. vs. Railroad Commission of Georgia, 262 U. S., 725; Brooks-Scanlon Corporation vs. United States, 44 Supreme Court Reports, 47.)

In the light of these decisions I have sought to ascertain the original cost of construction, the amount expended in permanent improvements, the amount in market value of outstanding bonds and stock, the present cost of construction, the probable earning capacity of the property under the rates prescribed by the statute under consideration and the sum required to meet operating expenses, together with such relevant facts as might be available.

In this connection it has been my purpose to bear in mind that while value is, after all, a matter of opinion, yet opinion evidence is not binding upon the Court and does not require the Court to surrender its own judgment thereby substituting the opinion of a witness for that of the Court. (The Conqueror, 116 U. S., 110, 131-3; Head vs. Hargreave, 105 U. S., 45, 49.)

Within such rule the following facts seem reasonably well established:

When the plaintiff acquired the properties of these seven vendor corporations, November 4, 1895, the purchase price was paid by issuing the bonds of the plaintiff to the face value of $10,600,000, and by issuing its capital stock to the par value of $15,000,000, thus indicating a purchase price measured in the par or face value of the securities in the aggregate of $25,600,000. Certain of these properties [fol. 67] were taken subject to subsisting mortgages, the payment of which was assumed by the plaintiff in addition to the issue of these securities. An effort was made to prove the cost of this property to the vendor corporations. Many difficulties, however, were encountered. It appeared that no inventory existed showing what properties as matter of fact were then acquired by the plaintiff. Many ancient records and books of account of the vendor corporations were found, such as minute books, ledgers, journals, etc., but no complete record, however, as to any one of the vendor companies. One of the plaintiff's witnesses, a certified public accountant, testified that he had carefully examined all of these books and found the records so incomplete that it was impossible to ascertain the amount which the vendors had paid for the properties apparently owned by them and presumably turned over to the plaintiff in November, 1895 (pp. 6760, 7276, et seq.). These books were made available to the defendants who, in turn, caused

the same to be examined by certified public accountants of their own choosing. The result was substantially the same, although additional information concerning the cost of certain specific items was thereby developed (p. 7832, et seq. and p. 7955, et seq.). No attempt was made, however, by either side to fabricate from these incomplete records the cost to the vendors of the properties which it is assumed were acquired by the plaintiff. A further difficulty was encountered in an effort to show what properties owned by the plaintiff on the 1st day of June, 1923, had been acquired on November 4, 1895. The Attorney General called a number of employees of the plaintiff who had been in the employ of the vendor corporations prior to November 4, 1895, and who had remained in the employ [fol. 68] of the plaintiff thereafter and up to the present time. By this means a general picture of certain of the plants on November 4, 1895, was drawn from the memory of these witnesses, but the effort to trace the cost of the properties proved abortive in the main and was limited to certain specific items (p. 5257, et seq.). Taking the evidence on this subject as a whole, and without stopping to make an extended analysis, I deem it sufficient to say that an industrious effort was made by plaintiff to establish the original cost of the vendors, which proved unsuccessful, and the defendants supplemented this effort with no greater success. I therefore conclude that it is incapable of proof. An examination of these books, however, disclosed certain facts, even though the objective was not attained. When these transactions were consumated November 4th, 1895, the books of the vendor corporations, with at least one exception, had not been technically closed, but presented ledger balances as of November 4th, 1895; on that day, the plaintiff recorded these transactions by way of opening journal entries on its own books of account. We thus have the ledger balances shown on the books of the vendor corporations and the treatment adopted by the vendee with reference to the same subject matter at the same date. The ledger balances upon the books of the vendor corporations indicated that the assets acquired by the plaintiff were carried at an aggregate valuation of $16,524,095.35. This included, however, an item for "Franchises and Rights," carried by one of the vendor corpora-

tiions, namely, The Citizens Gas Company of Brooklyn, amounting to $1,250,000. Deducting this item it appears that the physical assets conveyed to the plaintiff were carried by the vendor corporations at an aggregate valuation of $15,274,095.35 (Plaintiff's Exhibit 297).

[fol. 69] The original journal entries formulated by the plaintiff recording the acquisition of these same properties indicated an aggregate valuation of $28,799,731.92 (Plaintiff's Exhibit 297). In this item, however, was included a valuation of intangible assets "franchises and rights" to the amount of $3,050,000. No such items had appeared upon the books of the vendor corporations except the item of $1,250,000 above referred to. If we disregard these items, it would appear that in its opening journal entries the plaintiff gave to the physical property so acquired an aggregate valuation of $25,749,731.93.

The effort to establish actual cost of vendors having thus proved futile, the plaintiff produced opinion evidence, first as to what these properties should have cost the vendor corporations and, secondly, the reproducible value of the same at the time they were acquired, November 4, 1895. Plaintiff's expert testified that he had considered such items of cost as could be gleaned from the incomplete books of the vendor corporations and that he had given due consideration to the same and that he had ascertained the general trend of prices during the period covered by the corporate life of the vendors, approximately from the year 1850 down to the date of the conveyance, 1895, and although unable to ascertain the respective dates of actual construction of these various properties, had adopted index values throughout the period which enabled him to express the opinion that properties referred to in a hypothetical question by way of capacity and general description, in the absence of an inventory, should have cost $23,976,790 (p. 5056). The witness further stated that in expressing this opinion he had excluded land, franchises, working [fol. 70] capital and going concern value (p. 4546). The land acquired by the plaintiffs had been carried by the vendors at a valuation of $2,619,226, and was set up on the books of the plaintiff in its opening journal entries at a valuation of $5,349,400. This same witness testified

that in his opinion the reproducible value of these properties in November, 1895, was $17,996,216 (p. 4548), excluding, of course, land, franchises, working capital and going concern value.

It was further shown that at the time this transaction was consummated the vendor corporations had outstanding capital stock aggregating in par value $9,970,000, together with bonds of the aggregate face value of $3,900,000, making the total par or face value of outstanding securities $13,870,000; and that the market value of these securities as established by appropriate records aggregated $20,000,000 at that time (Def. Ex. 181).

Summarizing, therefore, all of the evidence which is designed to illuminate the question either of "Historical Cost" or of "Book Value" of the physical properties acquired by the plaintiff November, 1895, at the time of such acquisition, we have the following:

(a) Valuation by the vendor corporations as expressed upon their books by way of ledger balances November 4th, 1895 ..	$15,274,095.35
(b) The valuation placed upon all properties by the plaintiff itself in its opening journal entries aggregated $28,799,731.92. If we deduct the valuation placed by the plaintiff upon the intangible assets then [fol. 71] acquired, namely, $3,050,000, it would appear that the plaintiff's own valuation of the physical assets at that time was	25,749,731.93
(c) The purchase price of the physical assets is indicated as follows: The gross purchase price consisted of securities issued at a par or face value aggregating $25,600,000, together with the assumption of existing mortgages aggregating $3,900,000 or a total of $29,500,000. "Franchises and rights" were carried at $3,050,000. We may perhaps be justified in the inference that the plaintiff was of the opinion that it had paid for the physical assets, the difference, namely.....	26,450,000.00

(d) Again plaintiff's valuation of these assets allocated about 88 per cent to physical property and about 12 per cent to intangible items. It may perhaps be inferred that they deemed the purchase price capable of the same allocation, which would give to the physical properties a valuation of about..... 25,960,000.00

(e) Opinion evidence of the plaintiff's expert asserted that these physical properties should have cost the vendor corporation $23,976,790, to which should be added plaintiff's valuation of the land acquired, $5,349,500..... 29,326,190.00

[fol. 72] (f) Opinion evidence of plaintiff's expert asserted that the reproducible value of the physical properties in November, 1895, was $17,996,216, to which again must be added the land valuation, $5,349,400 ..... 23,345,616.00

(g) The face or par value of securities of the vendor corporations issued and outstanding at the time of the transaction, was 13,870,000.00

(h) The market value of those same securities at that time was..... 20,000,000.00

The difficulty of establishing reliable data as a starting point thus becomes manifest. This difficulty is accentuated by the fact that the vendor corporations from time to time charged to profit and loss various capital items aggregating about $2,000,000, and there seems no data available from which to determine whether or not any tangible property referred to or reflected in these entries was actually acquired by the plaintiff, even though thus charged off. On the 1st day of January, 1909, a Uniform System of Accounts was promulgated by the Public Service Commission of the State of New York, from which date either "Historical Cost" or "Book Cost" may be more readily traced. Withdrawals of items charged to fixed capital betwen No-

vember 4, 1895, and December 31, 1908 (that is prior to the installation of the Uniform System of Accounts) were fixed by stipulation between counsel at $4,000,000.00 (p. 3868.) In the meantime, however, the plaintiff had purchased the [fol. 73] properties of the Equity Gas Works and paid therefor $568,066.00. The plaintiff had also acquired the entire capital stock of five subsidiary corporations, namely, Jamaica Gas Light Company, Richmond Hill and Queens County Gas Light Company, The Woodhaven Gas Light Company, The Newtown Gas Light Company and The Flatbush Gas Company. These subsidiary corporations maintain a separate corporate existence but manufacture no gas. They purchase from the plaintiff the gas distributed to their consumers, and certain properties owned by the plaintiff are used by these subsidiaries, but, as already stated, there is no available data by which the actual cost of such properties can be ascertained. As a result of calculations from the exhibits in evidence, however, it is estimated that the property so allocated to the subsidiaries should have cost the vendors $5,123,146. Utilizing this estimate, the effort to establish the book cost of the properties of the plaintiff used and useful in its gas business on the 1st day of June, 1923, would lead us into the following analysis and calculation:

The opening journal entries on November 4, 1895, indicate a valuation of physical assets	$25,749,731.93
It appeared in evidence that on the 1st day of June, 1923, the books of the plaintiff showed an aggregate net fixed capital of $49,199,133.93. If we take from this the opening journal entry of November 4, 1895, $28,799,731.93, the difference would represent the net additions to capital subsequent to November 4, 1895, as shown by the books of the plaintiff, namely	20,399,402.01
[fol. 74] To this should be added the amount paid by plaintiff to acquire the Equity Gas Works (Defendant's Exhibit 46)	568,066.00
Total	$46,717,199.94

From this should be deducted an item representing the withdrawals from capital between November 4, 1895, and December 31, 1908, fixed by stipulation at $4,000,000, as well as an estimate of the cost of properties used by the subsidiaries, say 10% of the remainder ($42,717,199.94), namely, $4,200,000	$8,200,000.00
This analysis of the books of the plaintiff corporation would indicate (though not establish) that the net cost of physical properties, including the Equity Gas Work and excluding property utilized by the subsidiaries, as of June 1st, 1923, was.	$38,517,199.94

The capitalization of the plaintiff on the 1st day of June, 1923, as represented in outstanding stocks at par and bonds at face value aggregated $46,579,000 (Plaintiff's Exhibit 78). The market value of these securities on that day was $48,750,000. The fixed capital of the plaintiff on that day, as the same appeared upon their books of account, excluding any value for franchises and rights aggregated $46,149,133.93.

A fair picture of plaintiff's activities may be gained by noting that on June 1st, 1923, it owned and operated six [fol. 75] manufacturing plants having an aggregate daily capacity of nearly 125,000,000 cubic feet of gas (pp. 275-6), it owned 26 commercial holders with pumping stations having a total storage capacity of over 30,000,000 cubic feet, exclusive of relief holders; and it shared with its subsidiaries the use of other holders and stations owned by the latter having an additional aggregate capacity of approximately 26,00,000 cubic feet; it maintained various branch offices throughout the Borough of Brooklyn as well as storage yards and garages at convenient places; it owned and used 25 parcels of real estate and rented for its use several other parcels; it had nearly 500,000 meters in service and about 8,000 in stock; it had over 1,000 miles of mains in use and nearly 150,000 services; and its maximum day's send-out during the winter of 1923 and 1924 was nearly 95,000,000 cubic feet.

Upon the cost of reproduction of these properties as of June 1st, 1923, a vast amount of specific evidence was introduced by the plaintiff with reference to each class of property. The testimony of witnesses was largely supplemented by exhaustive schedules and tabulations prepared for the purpose of showing how the witnesses arrived at their respective opinions and quite fully analyzing the methods of calculation employed. All such schedules will be found among the exhibits in evidence. A copy of each such exhibit was supplied to counsel for the defendants sufficiently in advance to afford opportunity for analysis with the aid of their own experts prior to cross examination. The books of record and account of the plaintiff were likewise rendered available to the defendants and their experts. It appears here and there in the record that the defendants availed [fol. 76] themselves of this permission and that many such books and records were as matter of fact examined by or on behalf of the defendants during the progress of the trial. I know of no instance where a request by the defendants in this regard was not granted by the plaintiff. In at least one instance of major importance it appears in evidence that expert engineers employed by the defendants were actually in conference with expert engineers employed by the plaintiff concerning a voluminous exhibit which plaintiff's expert had prepared and which was introduced in evidence. The defendants Public Service Commissioners possessed such familiarity with these books and records (the exhibits being largely compilations therefrom) as would naturally flow from the exercise of their visitorial powers and from the possession of reports filed with the Commission by the plaintiff at stated intervals as required by law and by the rules of the Commission. It seems justifiable to charge these defendants with that degree of knowledge of the contents of these books and records of the plaintiff as would enable them to challenge any erroneous data introduced in evidence by the plaintiff. In the main, however, plaintiff's evidence on reproduction cost was not contradicted. All of the witnesses were exhaustively cross examined by counsel for the defendants and throughout the cross examination these schedules and tabulations were exhaustively analyzed. No glaring inaccuracies were de-

veloped and the record contains no imputation of an attempt to mislead the Court nor any suggestion that plaintiff's witnesses were unworthy of belief or that their testimony represented anything other than their conscientious opinion with reference to the subject matter of this inquiry.

[fol. 77] Much of this evidence was highly technical, and the opinions were based upon a technical knowledge of the subject matter. Facilities were at the disposal of the defendants by utilizing the staff of trained experts, accountants and engineers maintained by the Public Service Commission at public expense and peculiarly available in such an action as this where the interests of the community are to be safeguarded. Recognizing the untiring zeal and unusual skill of counsel throughout the trial, the unmistakable evidence of careful study easily discerned in the conduct of cross examination, I am constrained to regard the absence of expert testimony traversing that of the plaintiff as justification to the court in relying upon plaintiff's evidence and regarding the same as trustworthy. This is peculiarly true in view of the fact that an expert for the defendants had prepared a voluminous exhibit and the same was introduced in evidence but subsequently withdrawn by defendants' counsel and no substitute therefor was presented for consideration. It is a fair inference that plaintiff's evidence cannot be successfully challenged except as to such matters as were developed in the cross examination. The effect of such variations as appeared upon cross-examination can scarcely be measured except by one equally qualified as the expert under cross examination. No attempt, however, was made by the defendants to fabricate these contra considerations into an opposing expert opinion. For example, stress is laid by the defendants' counsel upon the testimony of one of plaintiff's experts that his conclusions were based upon excavations made by hand. Upon cross examination it was made to appear that he was perfectly familiar with the steam shovel and other mecha-

[fol. 78] nisms of that type, yet it does not appear by any evidence adduced by the defendants that these should have been used and that economy would have resulted. Again, the market price of cast iron pipe was shown to be variable and the unit cost of labor adopted by plaintiff's witness was challenged in cross examination upon the ground that the unit thus adopted was higher than the unit derived from

the existing payroll of the plaintiff at that time, June 1st, 1923. On the other hand, when plaintiff had rested defendants offered no evidence to the effect that some other unit for the market price for cast iron pipe should be adopted; and as to the unit cost of labor it appeared that permanent employment was a factor to be taken into consideration, as well as the variations of the labor market, although it was urged that inasmuch as the proposed construction would consume approximately two years this should be deemed substantially permanent employment. Examples might be multiplied. The Court has not the benefit of any opinion expressed by experts called by the defendants. With the record in this condition, I have been greatly aided by exhaustive and voluminous briefs submitted on behalf of the defendants. Nevertheless, the arguments of counsel, however cogent, are not a substitute for evidence. For these reasons I have deemed it essential to give unusual attention to the evidence of the plaintiff's witnesses and to scan that evidence in the light of all that was elicited upon cross examination. There are features here and there which have led me to regard some estimates as somewhat higher than the evidence taken as a whole warrants. These features will be reflected in the findings and in the comments upon the various classes of property about to be taken up. [fol. 79] This work of the Special Master has been pervaded by a consciousness of the danger that inadvertently, without the assistance of expert evidence challenging that of the plaintiff, the superficial education of the layman with reference to these highly technical matters might lead him to arrive at a conclusion not warranted by the evidence, thereby substituting a personal opinion for the probative force of testimony. On the other hand, the danger of adopting the plaintiff's evidence substantially in toto as a basis for findings is manifest. As between these two dangers I have given somewhat greater consideration to the record than might have been essential had the aid of defendants' experts been made available, and I have arrived at the following conclusions.

Land

The land is specifically described in appropriate exhibits. For the purpose of establishing its value on the 1st day of June, 1923, plaintiff submitted the opinion of experts.

Aside from cross examination, the defendants made no attempt to challenge the evidence of these experts beyond the introduction in evidence of the assessed valuation of the land for purposes of municipal taxation made in October, 1922, that is eight months prior to the date to which the controversy in question is addressed. While there are sporadic cases in which assessed valuations for taxation purposes have been received as evidence of market value, the general rule seems to be contra. Manifestly, the assessors themselves might have been called and, if shown qualified, would have been permitted to express an opinion, subjecting themselves to cross examination in that regard. [fol. 80] In the instant case counsel stipulated as to what these assessed valuations were for the year 1923, and the plaintiff made no objection "to this method of proving them upon any ground of competency." The plaintiff, however, objected to the introduction of these valuations made in October, 1922, as immaterial and irrelevant. The objection seems to be limited to the proposition that an assessed valuation made in October, 1922, was immaterial and irrelevant to establish the value on June 1st, 1923 (p. 603, et seq.). The record in its present form proves no more than would have been established had "the amount of the assessed valuations" been shown by producing the assessment rolls. These assessed valuations would not have been received in evidence had it not been for the stipulation, as opportunity to cross examine the assessors themselves was denied the plaintiff and there is no evidence qualifying these assessors as experts. Assuming that the assessors themselves had been called and had been shown duly qualified to express an opinion, I am inclined to think that the difference in date is not so remote as to render the evidence immaterial and irrelevant, particularly in the absence of any evidence tending to show any change in market values between October, 1922, and June, 1923. Accordingly I have considered these assessed valuations of October, 1922, as perhaps some evidence of the value of this land on June 1st, 1923. There is a great disparity between these assessed valuations, which aggregate $2,769,800, and the valuations of plaintiff's experts, which aggregate $3,451,600, a difference of $681,800. Turning to the cross examination of plaintiff's expert, we find some instances where the witness seems to have had a more limited amount of data upon

which to base an opinion than in many other instances. It [fol. 81] is noticeable that these assessed valuations, with negligible exceptions, are uniformly lower than the opinions expressed by plaintiff's experts. It may be argued that, having in mind the duty charged upon these assessors by the statute, there is a presumption that they performed their duty; yet we know that many factors as, for example, equalization, enter in arriving at these determinations. Upon mature consideration of the entire record, I have arrived at the conclusion that the value of this land on June 1st, 1923, should be placed at not to exceed $3,000,000.

Buildings and Structures Other Than Manufacturing Plants and Stations

The evidence on this subject is somewhat perplexing. Mr. Burt, an expert called by the plaintiff, expressed the opinion that the reproduction cost amounted to $7,149,685. He distinguished buildings at the works, where he placed the reproduction cost at $4,354,549, from buildings outside of the works, where this reproduction cost was placed at $2,795,136. (Plaintiff's Exhibit 171). Mr. Burt further testified that it would require an expenditure of $20,756 to restore these buildings to a condition equal to new. (Plaintiff's Exhibit 172). The expenditure thus stated to be required seems negligible, but the defendants have introduced no evidence to the contrary. Upon cross examination, there was a suggestion in the form of questions propounded to the witness to the effect that while Mr. Burt's valuation was as of June 1st, 1923, the plaintiff had, as matter of fact, between June 1 and December 31, 1923, spent approximately $7,000 in repairs upon the buildings 1116 and 1124 Fulton Street (page 2170), and substantially a [fol. 82] like amount upon repairs to the building 176 Remsen Street (page 2172), although the witness had testified that the latter building required an expenditure of only $380. (Plaintiff's Exhibit 172). Whether or not such expenditures as were thus suggested by the questions were as matter of fact incurred by the plaintiff, does not specifically appear, except from an examination of plaintiff's books of account in evidence. These books do not sustain the suggestion embodied in the questions, although they indicate that repairs were made subsequent to June 1st,

1923. Mr. Burt testified that at the time of his examination some repairs were in process of installation, and I interpret the testimony of Mr. Burt as substantially to the effect that in making his valuations and estimates he deemed the repairs then in progress as having been carried to completion. Pursuant to the stipulation of counsel, the assessed valuation of certain of these properties, adopted for purposes of taxation in October, 1922, was introduced in evidence. Counsel for defendants drew especial attention to nine propeties, where the aggregate cost of reproduction was said by plaintiff's witness to amount to $1,740,923.34, while the aggregate assessed valuation of the same buildings was only $660,200, namely:

	Burts' estimate of cost of reproduction new	Assessed valuation (Defts.' Ex. 187)
General Office Building, 176 Remsen Street	$1,026,099 28	$447,000
Demonstration Building, 180 Remsen Street	135,337 21	22,000
Warehouse, 130 Atlantic Avenue	56,345 01	7,400
[fol. 83] Warehouse Garage, 1016 Fulton Street	30,131 67	14,000
Nassau Branch, 1024 Fulton Street	219,419 73	83,500
Metropolitan Branch, Fifth Avenue and Eighth Street	73,576 38	24,500
Williamsburg Branch, 322 Bedford Avenue	117,529 92	40,500
Fitters' School, 197 St. James Place	34,210 24	8,650
Laboratory and Medical School, 191 St. James Pl.	48,273 90	12,650
Total	$1,740,925 34	$660,200

Here is a disparity almost three to one. The cross examination of Mr. Burt did not result in any serious modification of his testimony, and the defendants have introduced no evidence challenging or traversing the opinion and calculations of this witness. The assessed valuation must be regarded as "an estimate of the sum for which, under ordinary circumstances, the same parcel of real estate would sell with and without improvements," such being

the duty of the assessors. (Greater New York Charter, Section 889.) Mr. Greve frequently utilized assessed valuations of buildings for the purpose of arriving at an opinion concerning the value of land. In some instances he testified that having formed an opinion concerning the value of the land and buildings taken as a unit, he deducted the assessed [fol. 84] valuation of the buildings and thus arrived at his opinion concerning the value of the land. This ties into the testimony of Mr. Greve the assessed valuations of the land with and without the buildings in a somewhat perplexing fashion, and perhaps gives to these assessed valuations for the present purpose a somewhat different status than in the case of land values only. Nevertheless, they do not operate very forcefully, if at all, by way of a challenge to the testimony of Mr. Burt as to the cost of reproduction new.

The defendants have directed attention to the doctrine enunciated in People ex rel. New York Dock Company vs. Cantor, 208 A. D., 52, where an assessment of waterfront property was under consideration. I have been urged to distinguish between buildings and structures peculiarly designed for gas-making purposes on the one hand and other buildings utilized by the plaintiff for offices, storage, demonstration and so forth. It is claimed by the defendants that evidence of reproducible cost of the latter class of buildings should not be received until it had appeared in evidence that other suitable buildings were not available in the market, and that if available the evidence should have been limited to what it would cost to purchase a suitable substitute.

I have not followed the ruling in the New York Dock Company case mainly for the reason that the task confronting the Court in that case was not identical with the task which we here confront. We are seeking to ascertain fair value, and to that end we are authorized to receive evidence of reproduction cost upon the day in question, not because reproduction cost is synonymous with fair value, but because that cost and other relevant features are deemed [fol. 85] competent evidence to assist the Court in ascertaining fair value. In the New York Dock Company case the Court was seeking to ascertain market or exchange value, and because the building possessed individual char-

acteristics to which other buildings were not comparable, destroying their market, evidence of reproduction cost was received as a means of ascertaining market or exchange value.

While in cross-examination the varying price of brick and other commodities was established, yet no attempt was made to show the effect of these varying market conditions of building material upon calculations of plaintiff's witnesses. Upon all the evidence, I fix this item at $7,900,000.

Mains

Plaintiff's witness, Mr. White, an expert, for many years in the employ of the plaintiff, having charge of the distribution system, including al installations, commanding a force of 600 to 800 men, testified that the cost of reproduction of mains of the plaintiff consisting of 1,017 miles as of June 1st, 1923, would aggregate $19,073,209 (p. 1122, Pl. Ex. 164). The same witness made an estimate in June, 1923, as of January 1st, 1923, based upon 1,013 miles of mains, and at that time estimated the cost of reproduction as of January 1st, 1923, at $16,206,084 (p. 1904). It appeared in evidence that these mains occupied 905 miles of streets, the difference indicating the exent to which parallel mains have been laid in certain streets. The estimate as of January 1st differs from the estimate of June 1st in that an item of overhead was omitted from the former and included in the latter, namely $1,162,663. It further appeared [fol. 86] in the cross-examination of this witness that he had calculated the expense of installing each of these mains separately, making no calculation upon the theory that one excavation might be made large enough to carry all parallel mains wherever they might exist. Another witness subsequently called by the plaintiff calculated that a saving of $146,755 was possible by avoiding repeated excavations with the necessary backfill and surface finishing (p. 3991). Cross examination revealed that the unit price adopted for materials was subject to variation, and that in the absence of an actual negotiation for the purchase of these vast quantities, there was room for more than one opinion as to the unit price which should be adopted. This was so also with reference to the labor unit. Quotations of prices

from various sources were introduced in evidence by the defendants during the progress of cross-examination, but varying conditions were shown to exist which make it substantially impossible for one other than an expert equally well qualified to construct a new calculation based upon some other units. The defendants have not produced such evidence, and the Court has not the benefit of the opinion of any other expert called upon to analyze the same problem by way of an attempt to traverse the method adopted and the conclusions arrived at by plaintiff's witness. Nevertheless taking the testimony as a whole, it seems to me that the result of cross-examination warrants the conclusion that the unit prices of material and labor adopted by this witness were somewhat generous. If we take Mr. White's estimate as of January 1st, namely, $16,206,084, and deduct from it the extravagance which would have resulted from a separate excavation for each main where parallel mains [fol. 87] were in a given street, namely, $146,755, there would remain $16,059,329.

The estimate made by this witness as of June 1st, 1923, was $19,073,209. I deduct the allowance for economy in excavation, $146,755, making the net estimate $18,926,454.00, exclusive of charges for general engineering contractor's expenses and profit, administrative, legal and miscellaneous general expenses during construction, interest during construction and other undistributed structural costs (Plaintiff's Exhibit 164). While the cost of installations here and there actually made by the plaintiff on or about June 1, 1923, indicate a lower unit price, the evidence also shows that these installations were under different conditions, and would be improperly comparable with the larger problem unless appropriate allowance be made for equalizing various features which differentiate the respective installations. There is no evidence in the case giving the Court the benefit of such a comparison. The witness was confronted with other estimates made by himself, one for taxation purposes, as of December 31, 1922, and another as of October 1, 1919. I have given careful attention to the material thereby presented. I have arrived at the conclusion that the evidence upon this item fairly establishes that these mains could have been installed as of June 1, 1923,

for at least $18,000,000. No allowance is here made for depreciation. The evidence was substantially to the effect that the life of these mains is unknown, and that whatever depreciation takes place is so slight that it is a negligible factor. For the guidance of the Court, the plaintiff produced a piece of cast iron pipe which had been installed [fol. 88] approximately fifty years ago. Experts testified upon examination of this exhibit that it showed no substantial deterioration and, for the purpose of a gas main, was as good as new. This evidence was not controverted.

Services

Plaintiff's witness, Mr. White, estimated the cost of reproducing the services in use at $6,256,506.65, exclusive of charges for general engineering contractors' expense and profit, administrative, legal, miscellaneous general expenses during construction, interest during construction and other undistributed structural cost (Plaintiff's Exhibit 165).

These services extend from the main in the highway, to the curb, under the sidewalk to the building line of the consumer, and are extended upon the consumer's premises into the building. Mr. White's calculation was based upon an average length of forty-one feet as to each service. Not all of the expense of installing these services has been borne by the plaintiff. A contribution has been made by some consumers in some cases. The status of these services and the extent to which they may be properly included within the cost of reproduction has been the subject matter of extended discussion between counsel for the respective parties. At the close of the cross examination, the evidence on this subject may be summarized somewhat as follows. Plaintiff's books of account, since January 1st, 1909, when the uniform system of accounts was promulgated, record the expense of installing the entire service and record also the contributions received by the plaintiff from consumers; when a service is replaced the consumer makes no contribution to the cost of replacement; the [fol. 89] pipe and all other materials constituting these services were purchased by the plaintiff in the open market, and the services were installed by the plaintiff at its own expense; these installations were at the request of the con-

sumers; some consumers paid a portion of the expense of the installations, and the custom was to charge the consumer from the house line to the meter; the practice in this regard seems not to have been uniform, but generally prevailed; there is no record showing the extent to which consumers actually contributed toward the expense of installing these services; there is no data identifying the particular consumers who may have made such a contribution and those consumers who did not; the proportion of the service pipe installed upon the land of the consumer varies and there is no record by which this can be established.

I am of the opinion that the material constituting these services having been the property of the plaintiff at the time of the installation and having been installed by the plaintiff at its own expense, at the request of the consumer, title must be deemed to remain in the plaintiff until something to the contrary be shown. The mere fact that a consumer has contributed something toward the expense of the installation as a whole does not enable the court to arbitrarily allot title to some portion of the service in the plaintiff and some other portion in the consumer. It has been suggested that we invoke the familiar rule to the effect that such portion of these services as was installed upon consumer's premises became a part of the freehold in each instance. It seems, however, a fair inference from the evidence that this portion of the services [fol. 90] remained personal property, owned by the plaintiff, installed upon the premises of the consumer at his invitation and by his license. The unit price adopted by plaintiff's witnesses was the subject of cross examination, from which it appeared that the cost of installing services as recorded in the books of the plaintiff was substantially lower than the estimated cost of reproduction on June 1, 1923; that these services when withdrawn have been entered at cost, and that such units were noticeably lower than the estimated cost of reproduction. It appeared, however, that plaintiff's cost was modified by crediting the contribution of the consumer, and that the withdrawal cost was this net amount. The amount of the contribution by the consumer not having been shown, the basis of comparison is not available. The attention of the witness was called to an estimate made by him of the reproduction cost of these

services as of October 1, 1919, and to another estimate as of December 31, 1922, made for taxation purposes, and to a still further estimate made by him as of January 1, 1923. Each of these estimates was differentiated from the estimate as of June 1, 1923, it being shown that items such as organization, insurance, field supervision, disturbed pavement, storage of material, and so forth, were variously treated in these several estimates, but the cross examination did not proceed far enough to develop just what treatment each of these items did as matter of fact receive in each one of the estimates. Thus again the material is not before the court from which a true comparison can be made.

The defendants offered no evidence traversing plaintiff's estimate and calculation. Plaintiff made no allowance for [fol. 91] depreciation of these services, although it appeared in cross examination that obsolescence and electrolysis were factors. While it was shown that in 1912 forty-nine services were taken up because they had corroded (Page 1181), it does not appear how long these had been in use, and the ratio seems small, for while the exact number of services in the ground during that year was not shown, it does appear that there were 147,687 as of June 1st, 1923 (Plaintiff's Exhibit 165). Plaintiff's Exhibit 167, prepared by Mr. White, shows that services had been replaced, and it later appeared that many such services were replaced because the consumers required a larger pipe. If, then, the element of depreciation exists it would seem to be negligible, particularly in view of the fact that the defendants have offered no evidence upon this subject. I fix this item at $6,250,000.

Gas Meters

Plaintiff proved that on June 1, 1923 it had 487,745 meters, and that the cost of the same new on that day would have been $4,550,162.05 (Plaintiff's Ex. 166).

This evidence was received after it had first appeared through the evidence of plaintiff's expert, Colonel Miller, that there was substantially no depreciation in these meters; that they were substantially immortal as to their serviceability, and that a meter in use was more valuable than a new meter, while a repaired meter was equal in value to a new one (p. 4053). Upon cross examination it

developed that this opinion evidence was based upon the examination of fifty or sixty meters upon consumers' premises (p. 4276), and an examination of meters in the [fol. 92] repair shop. This witness testified that after an examination of the records of plaintiff corporation he found nothing indicating the serviceable life of a meter (p. 4267). It appears in evidence, however, that 25,000 meters were, as matter of fact, scrapped by the plaintiff in 1922 (p. 4270), and that more than 11,000 meters were scrapped between June 1st and December 31st, 1923 (p. 4268); that $335,515 were spent in repairing meters during 1923 (p. 4273), and that $202,595.15 were expended for repairs to meters between June 1, 1923 and December 31, 1923 (p. 4273). How many meters so repaired were comparatively new meters is not shown, nor have we any evidence indicating the average life of the meters thus repaired. Again, the evidence does not disclose why the discarded meters were scrapped.

Defendant caused an examination of plaintiff's records to be made for eleven years, 1913 to 1923, from which it appeared that during that period 56,870 meters had been retired. 19,000 of these were retired in the year 1923. Defendant's witness put in evidence a calculation based upon this examination of plaintiff's records by which he arrived at the opinion that the meters retired during these eleven years had an average life of 24½ years. (Defendant's Exhibit 186.) While this evidence leads to the conclusion that depreciation is a factor to be considered in estimating the reproducible value of meters in use June 1, 1923, yet it seems substantially impossible to deduce from this evidence a unit or rate of depreciation which may be safely adopted. The evidence seems not to establish such a unit. It is manifest from the evidence as a whole that at one time wet meters were used: that later on the wet meter was sup- [fol. 93] planted by the dry meter; that this process was gradual; that some of the meters in use to-day may be wet meters, but how many is not shown; that the dry meter has more longevity of service; that repairs do not arrest or modify this period of longevity. So far as the evidence before me is concerned, I have no way of determining what proportion of the discarded meters were wet meters, nor what proportion were absolutely and utterly destroyed, as by fire or by violence; nor again what proportion were dis-

carded because a larger meter was needed. The evidence does disclose that these reasons exist, but the extent to which they affect this inquiry does not appear.

Another of plaintiff's witnesses, general superintendent of the American Meter Company, estimated the life of a meter to be from 25 to 33 years, although he later stated that while general deterioration takes place, longevity is indefinite and that 33 years is not the life of a meter. Again he testified that the oldest meter he had ever seen in use was 47 years of age. Upon all the evidence I fix this item at $4,000,000.

Manufacturing Plant, Stations, and Gas Holders

Plaintiff's expert, Colonel Miller, testified that the cost of reproducing these properties as of the 1st day of June, 1923, would aggregate $15,113,366 (Plaintiff's Exhibit 283), and further testified that in order to restore these properties to a condition equal to new there would be required an expenditure of $528,368. (Plaintiff's Exhibit 284.)

It appeared in cross-examination that some of these holders were actually constructed by the plaintiff, is not [fol. 94] stances longer; that the former type of construction involved brick tanks, while in the more modern type of construction steel tanks are used; that the older holders have a small capacity as compared with the holders constructed during the last 20 years; that the unit cost of construction adopted by Colonel Miller was substantially higher than that incurred by the plaintiff in actual construction during the 20 years last past. The fact, however, that the prevailing cost of construction on June 1st, 1923, was higher than the cost prevailing at the time these various holders were actually constructed by the plaintiff, is not disputed. While the amount said to be required to restore these properties to a condition equal to new may seem small, yet the evidence of Colonel Miller is not met by any evidence on behalf of the defendants. Indeed I have been requested on behalf of the Attorney General to make a specific finding that this amount will be required to so restore the properties. Upon all the evidence, I fix this item at $14,500,000.

Overhead

Colonel Miller has testified that something in excess of $17,000,000 is a proper allowance for the items, omissions and contingencies; engineering and general contractors' expenses and profits; administrative, legal and miscellaneous general expenses during construction (estimated at about two years); interest and taxes during the same period; and organization and development prior to construction. His estimate was not met by any evidence on behalf of the defendants. I am referred to many decisions by public service commissions in various states where fifteen per cent and [fol. 95] sometimes a little less has been allowed for overhead expenses in a reproduction cost estimate, and my attention is also called to the case of Monroe Gas Light & Fuel Co. v. Michigan Public Utility Commission, 292 Fed. Rep. 149, where the estimate of the commission, fourteen per cent, seems to have been adopted for the purpose of giving the commission the benefit of every doubt, athough the utilities engineers in that case had testified that twenty per cent was a proper allowance. We should be required to allow at least 30% in order to justify the estimate of Colonel Miller. The authorities diligently collated by counsel for both sides lead me to the conclusion that the allowance for overhead should be somewhere between fifteen and twenty per cent of the estimated reproduction cost, exclusive of meters. To this must be added an allowance for the cost of financing. Mr. Addinsell places this at a minimum of five per cent and Colonel Miller regarded the estimate as conservative. I allow for these items of overhead and financing $11,000,000.

Equipment

The book cost of equipment appears by the evidence to be $653,000. There was no evidence of reproduction value and very little with reference to depreciation. It is a fair assumption that under prevailing conditions, of which the court will take judicial notice, this equipment could not be reproduced for much less than its book value. I fix this item at $600,000.

Summary of Reproduction Cost

Land	$3,000,000
Manufacturing plants, stations and holders	14,500,000
[fol. 96] Buildings and structures other than manufacturing plants and stations	7,000,000
Mains	18,000,000
Services	6,250,000
Meters	4,000,000
Overhead and financing	11,000,000
Equipment	600,000
Total	$64,350,000

From this must be excluded the property owned by the plaintiff but utilized by its subsidiaries, and in no sense dedicated to public use by plaintiff. Based upon Defendants' Exhibit 46, there would be allocated to the subsidiaries $6,498,090 leaving $57,851,910 as my finding of reproduction cost as of June 1st, 1923.

Fair Value

In determining the fair value of these physical properties we may briefly recapitulate the data now available. While the original cost has not been established, the same may be estimated as closely approximating $39,000,000; the book value is about $46,000,000; outstanding securities represent a capitalization of about $46,500,000, having a market value of $48,750,000; the reproduction cost is $57,800,000.

Many of these properties are half a century old; some are more modern in type than others; all the properties are serviceable, and yet some of greater serviceability than others. On the other hand, all have been shown to be in excellent condition. Upon all the evidence, I have arrived at the conclusion that the fair value of these properties may safely be placed at $50,000,000 for the purposes of this [fol. 97] action. I regard this as conservative. The finding as to reproduction cost was in itself designed to be conservative.

Efficient Substitute

Pervading the record may be discerned a consistent effort on behalf of counsel for the defendants to depart from the task of ascertaining "reproduction cost" of plaintiff's plant and to establish the probable cost of that which the defendants or their experts may have deemed an efficient substitute therefor. Perhaps the most serviceable illustration of this effort will be found in the cross-examination of one of plaintiff's experts where an attempt was made to show that a new method of erecting gasholders had been devised and embodied in Letters Patent obtained in Germany. Defendants' counsel stated that the purpose of this line of inquiry was to show the progress made in the art of building gasholders and to determine whether or not in any plan of reproduction the witness would recommend the construction of holders embodying these patented devices in preference to the holders now in use by the plaintiff. I excluded this testimony (page 4261 et seq.). Subsequently, counsel for the defendants requested a reconsideration of this ruling, and, with the assistance of briefs submitted upon both sides, I gave further consideration to the matter, ultimately adhering to the ruling already made. In the final briefs, this question having been further treated by counsel for the defendants, I have been led to again consider the question involved, but I am unable to arrive at a different conclusion. While the defendants offered no affirmative evidence to prove the cost of what they may have [fol. 98] deemed to be an efficient substitute, it is probable that the rulings of the master, just cited, deterred them from so doing, anticipating that such evidence, if offered, would have been excluded. While the defendants have no specific exception in the record to the rejection of such evidence, I deem it only fair to say that they were justified in interpreting the attitude of the master as above stated.

Primarily, as I read and understand the rule laid down in Smyth vs. Ames, subsequently reiterated and amplified, it would have been a departure from that rule to admit the evidence.

My reluctance to admit this testimony was further based upon a realization that by so doing we should be led into a field of unlimited speculation, involving opinion evidence

of one expert based upon the opinion evidence of another expert, embodying controversy upon academic questions which in the end could be of no substantial assistance in the effort to ascertain the "fair value" of that property which the plaintiff was devoting to the public service.

Had we entered upon this line of inquiry, it would have been necessary first to consider the scope, and then the validity of the letters patent in question. This would have necessitated opinion evidence from a given line of experts. Then would follow a secondary field of opinion evidence concerning the availability of these patent rights to the plaintiff and, if available, the cost. Next we would have been called upon to consider the comparative merits of such patented devices, as compared with the existing plant of the plaintiff opening a third field of opinion evidence. Finally, the cost of such installation would be taken up by still other experts.

[fol. 99] It is not inconceivable that more than one such patented device exists in which event, having once launched into this field, we should be called upon to cover the same by receiving and considering this class of evidence with reference to each device that either side might choose to present as an efficient substitute. If such evidence be deemed available with reference to holders, it would be equally available as to each other factor which goes to make up the plant of the plaintiff. A single example may illustrate my thought. Experts could be called to show that the land occupied by the plaintiff was not best suited to its purpose, and that by reason of the development of the community their stations might more profitably or economically be elsewhere located. One might recommend water front property, because of the ease in receiving supplies delivered by water, while another might recommend a location adjacent to the railroads, and still a third might be governed by proximity to the consumer. Examples might be multiplied, but sufficient has been said to indicate the reasons that constrained me to reject this evidence as not within the issues of this action and as not constituting facts relevant to the task of ascertaining the fair value of plaintiff's property utilized in its service on the 1st day of June, 1923, although the learned Attorney General adroitly suggested that such evidence might be

admitted as a "relevant fact." In support of their contention, counsel for the defendants cite the recent decision of the United States Supreme Court in Pacific Gas & Electric Co. (decided June 2, 1924). In that case, the company had, as matter of fact, acquired and utilized certain letters patent, which resulted in a lower cost of operation, and the [fol. 100] Supreme Court took the view that insufficient allowance had been made for the patent rights thus acquired, saying:

"As an operating unit the new combination had greater value than the old; but the court below disregarded the demonstrated worth of the element which wrought this change."

And again:

"The operating plant, made capable of producing gas at smaller cost, was declared less valuable than before. The result indicates error somewhere—either in theory or application of principle."

The court was there dealing with established and demonstrated facts, and was considering the means that had been adopted by the court below in ascertaining the "fair value" of the company's plant, which included the letters patent in question. I find in that case no authority for entering the field of speculation through a contest of experts as to whether or not the present value of plaintiff's plant would be enhanced, or an efficient substitute therefor be more economically reproduced, by adopting some new or different type of construction or process of manufacture to be rendered available by the acquisition of alleged outstanding patent rights.

Working Capital and Rate Base

A marked difference of opinion exists between counsel for the respective parties as to the amount to be properly allowed as working capital. While defendants have introduced no evidence challenging the opinion of Colonel Miller that $7,000,000 is a reasonable amount, yet through cross-examination the subject has been so far analyzed as to war-

rant a modification of that estimate. Recalling the uses [fol. 101] to which working capital is put as shown by Colonel Miller in Plaintiff's Exhibit 283, it would appear from Plaintiff's Exhibit 259 that the amount actually employed by plaintiff in 1922 and in 1923 averaged about $10,000,000. I allow $5,000,000 for this item. The rate base is thus established at $55,000,000 as of June 1st, 1923.

Between June 1st, 1923, and December 31st, 1923, there were additions to the capital of the plaintiff, which, after deducting withdrawals, aggregated the net amount of $3,856,971.00. Of this amount, the property devoted to the use of the subsidiary companies is allocated in the amount of $764,458.00 (Plaintiff's Exhibit 310, Defendants' Exhibit 46), making the rate base $58,092,513 as of December 31st, 1923.

Cost of Manufacture

Plaintiff makes carburetted water gas. In the processes of manufacture many commodities are utilized. Among others, coal and coke as generator fuel as well as boiler fuel. Gas oil is an important factor, and B. T. U. content turns upon the quantity of oil used in the manufacture of gas. Shavings and oxide also enter into the processes. There is a by-product of tar, and drip oil is salvaged. The tar is used as fuel, and the drip oil is sold. In ascertaining the cost of manufacture, credit is given for the tar and for the drip oil. Water is, of course, largely used. Labor in the manufacturing processes and labor and material in the matter of repairs constitute factors of manufacturing expense.

The books of the plaintiff are so kept that while the plain- [fol. 102] tiff manufactures and sells to the subsidiaries all gas supplied to the latter's consumers, yet the cost of the gas distributed to its own consumers is properly shown. Plaintiff's books of account are in evidence. Tabulated statements were prepared showing what is recorded in these books as the cost of gas manufactured and distributed in the year 1922 (Plaintiff's Exhibit 257), and also the cost of gas manufactured and distributed in 1923 (Plaintiff's Exhibit 258). The cross-examination of the plaintiff's witnesses on this branch of the subject was designed to analyze all of those figures exhaustively. The methods employed by the plaintiff in obtaining its supplies of coal, coke, gas

oil, and so forth, were carefully scrutinized, but developed nothing which seems to be properly the subject matter of criticism. Bids seem to have been sought in the open market from all available sources, and purchases ultimately made in the exercise of the discretion vested in executive officers. These purchases involved a consideration of the prices at which these commodities were offered, the ability of the bidders to supply the appropriate quantities, the storage capacity of the plaintiff, and the wisdom of having more than one source of supply available, as well as the quality of the merchandise itself. Defendants have offered no evidence challenging the propriety of these transactions, and the record indicates that the prices paid by the plaintiff were reasonable, based upon the mature judgment of its officers after appropriate investigation of market conditions.

A great deal of attention has been given to the relations existing between the plaintiff and its subsidiary corporations, particularly the price charged by the former to the latter for gas manufactured by the plaintiff and supplied to [fol. 103] these subsidiaries for distribution among the consumers of the latter. Inasmuch as the plaintiff owns all of the capital stock of these subsidiary corporations, it is apparent that opportunity is available to make the price charged such that an unconscionable profit might be realized either by the plaintiff as vendor or by the subsidiaries as vendees, and counsel for defendants have subjected these relationships to the most rigid scrutiny.

It seems that each year the plaintiff estimates the quantity of gas that will be needed by the subsidiaries during the forthcoming year, basing this estimate upon the experience of the past and the indications of the future. The price charged the subsidiaries is the result of a calculation based upon an estimate of cost of manufacture, cost of distribution and quantity to be consumed. It has been made to appear that these estimates were not always accurate; that is to say that at the end of a year the actual cost of production or the actual quantity of gas taken by the subsidiaries and distributed to their consumers was not precisely that which had been estimated. These inter-corporate relationships are properly the subject of judicial scrutiny in such an action as this, and I have been at great

pains to afford counsel for defendants unlimited opportunity of investigation, and have considered all that has developed as a result of that inquisition. I find nothing to criticise. There is nothing in the record which suggests a relationship between the plaintiff and its subsidiaries operating unfairly or unjustly upon either side of the bargain. It is urged by counsel for defendant that when, at the end of a given year, the facts have been developed, then the estimate made at the beginning of the year should be disre- [fol. 104] garded and we should base our calculations upon the facts as they actually transpired. Perhaps where we are concerned with the question of the confiscatory nature of a statute, this is theoretically true, but the differential I find to be so small that it seems negligible. The necessity for operating a vast industry of this nature on a budgetary basis is so apparent that unless a marked discrepancy between estimate and experience should have developed, it would not seem that the Court was justified in recasting the system of accounting. If an abuse had been shown to exist, or if this method of dealing with the subsidiaries had been shown to be a cloak for an artificial calculation of cost of manufacture, the Court would be quick to seize upon the facts in that regard and apply a correcting method.

A great deal of attention has also been given in the cross-examination to the cost of manufacture in each of the several plants of the plaintiff. This cost is not uniform. The plants are not equally well equipped. Some have more modern devices than others. It appeared in evidence that in some instances the cost of manufacture was somewhat increased at a given plant because certain repairs were in progress during the period under consideration. That work having been accomplished, presumably a similar condition would develop in some other plant, as the process of repair, rebuilding and installation of betterment is incidental to the life and progress of such an industry.

Colonel Miller, an expert called for the plaintiff, testified that he was very familiar with all these plants and with all the processes of manufacture which were there employed. He further testified that he was equally familiar with other plants in the Metropolitan District and elsewhere. He

[fol. 105] stated that he had compared the operating costs of the plaintiff with the operating costs of other companies throughout the Metropolitan District. He testified that these costs of the plaintiff were reasonable, and that the results of such comparisons did not indicate any unusual feature (p. 4129, et seq.). The defendants have not controverted this evidence. No expert has been called to challenge this opinion expressed by Colonel Miller, and we are left to consider the argument of counsel with reference to some of the factors that enter into the processes of manufacture.

In Plaintiff's Exhibit 264 will be found an exhaustive calculation designed to show the actual results of operation in 1923, when the plaintiff was making 587 B. T. U. gas, using 3.52 gallons of oil per thousand cubic feet at an expense of 5.67 cents per gallon of oil. This calculation is then adjusted in the same exhibit to show what would be the result in manufacturing 650 B. T. U. gas, necessitating a consumption of 4.50 gallons of oil per thousand cubic feet at the reduced expense of 4.80 cents per gallon of oil. The results of this calculation indicate that in 1923 it cost the plaintiff 93.95 cents per thousand cubic feet of gas. It further appears that the adjustment to conform to the requirements of the statute under consideration will involve a cost of 95.06 per thousand cubic feet of gas.

No corresponding exhibit has been introduced in evidence by the defendants, but certain items here and there have been challenged. A careful analysis of the opposing contentions indicates that the points at issue may be briefly presented without reproducing the involved calculation which will be found available in the exhibit itself.

[fol. 106] It is conceded that the Metropolitan plant is the most modern, and that the cost of manufacture there is less than at the other plants. The defendants urge that this plant should be taken as the standard and that the cost of manufacture should be calculated on data found here, to the exclusion of any consideration of the cost of manufacture in the other plants of the plaintiff. I have been unwilling to adopt this suggestion, and in view of all of the evidence submitted upon this subject, see no reason for rejecting the records of this company as the basis of ascertaining the cost of manufacture.

As to repairs we must either accept the actual amount expended during a given period as, for example, the year 1923 or the year 1922, or average the item of repairs during, say, five or ten consecutive years. Any attempt at the latter method would involve us in the varying cost of labor and material during such period. A calculation based upon the repair items for the last five years indicates that the difference between the actual repair item for the year 1923 and such an average would be less than three-quarters of a cent per thousand cubic feet of gas.

It is conceded that in the transmission of gas not all that is manufactured is delivered to the consumers. There is always an item of "unaccounted for" gas. This is due to leakage, condensation, expansion and contraction, among other things. An allowance must always be made for this item as a part of the cost of manufacture. What percentage shall be thus allowed has been the subject matter of considerable dispute. This factor varies with the consumption per mile of main, with the number of consumers within [fol. 107] a given distance, and with reference to other factors. It seems incapable of determination with precision, but experience enables these companies to determine approximately what this item ought to be. The Attorney General contends that 5% is an appropriate allowance. The records of the plaintiff indicate what this item amounts to in actual practice with them, and in the absence of any evidence attacking either the integrity of the record or tending to establish extravagance in that regard, I have accepted the company's own records as indicating the allowance that should be made for this item (Pl'ff's Ex. 258).

A substantial item of expense is charged for the special inspection and adjustment of gas appliances necessitated by the order of the Public Service Commission which went into effect October 1, 1922, namely, $108,668.23. The defendants challenge this item and I am of the opinion that it was abnormal and should not be regarded as a part of the cost of manufacture for the purpose of ascertaining whether or not the statutory rate is confiscatory. It therefor — disallowed. A similar argument is made with reference to the cost of maintaining this particular litigation, namely, $94,524.89. For the same reason I disallow this item. As to uncollectible bills, a marked difference of opinion has

arisen. The defendants urge that inasmuch as the statute enables the plaintiff to exact a deposit from each consumer in advance sufficient to cover his probable consumption for a month, and that this custom is so far followed by the plaintiff that it has on hand approximately $2,000,000 thus deposited by consumers, that any loss by way of uncollectible bills must be charged to the inadvertence of the plaintiff in not availing itself of the statutory privilege. This argument seems cogent, and is supported by authority [fol. 108] (Reno Power, Light & Water Co. vs. Public Service Commission of Nevada, Pur., 1923, E-485). If the evidence disclosed that these uncollectible bills constituted the differential between the amount of charge against a consumer in excess of the deposits exacted, we would have no difficulty. On the other hand, the matter is one of discretion, and presumably the plaintiff does not exact a deposit from every consumer, although its deposits do amount to the substantial sum above stated. If we are called upon to exclude this item, it must be upon the basis that the Court will substitute its own business judgment for that of the executive officers of the company in exercising the prerogative vested by the statute as to security. But the amount is small, and it is easily conceivable that a uniform system of exacting deposits might work hardship here and there. I think the item should be allowed. This view is in accord with that expressed by Judge Mayer in a former case.

The item of gross earnings tax as submitted in plaintiff's calculation requires revision. The plaintiff asserts that this item amounts to $133,254.33. This is challenged by the defendants upon the ground that it is not calculated upon a charge to the consumers based upon the statute under consideration, namely, $1 per thousand cubic feet, but is calculated on the amount they are actually receiving from the consumers pursuant to the injunction restraining the State from enforcing the statute. The differential appears to be $6,029. I am inclined to think this criticism is sound, and that for the purpose of this inquiry the calculation should be based upon the amount which the statute permits them to charge. The item is further challenged [fol. 109] upon the ground that it includes a tax upon excess dividends which amounts to $21,600 (Defendants' Ex-

hibit 155). I find it difficult to discern the theory upon which this should be included as an operating expense. In a proper case it might become the subject matter of consideration with reference to the rate of return, but I think it should be eliminated in ascertaining the cost of production. The defendants further call attention to the fact that plaintiff has included taxes on revenue from its subsidiaries amounting to $18,140.76 (Defendants' Exhibit 155). It appears, however, that a credit for this item is found under Operating Expense Credit (Plaintiff's Exhibit 258). I therefore recast the item of Gross Earnings Tax as follows: Amount claimed by plaintiff, $133,254.33. I disallow the State tax on excess dividends, $21,600 and the tax on revenue in excess of the $1 rate, $6,029, allowing the net item $105,625.33.

The evidence discloses that contracts have been made for a supply of oil during the coming year at a somewhat lower price than that which prevailed during 1923. Taking the cost of manufacture in 1923 as a base, the plaintiff has adjusted these figures of actual experience to indicate what it will cost to manufacture and distribute gas of the statutory standard at the lower price of oil during the coming year, in each instance using the quantity of gas produced in the year 1923 as a factor in the calculation. The figures presented in this adjustment and found in Plaintiff's Exhibit 264 are substantially as follows. Gas oil in 1923 cost the plaintiff 5.67 cents. The contracts already closed for the coming year indicate that the cost of gas oil will be reduced to 4.80 cents. In making gas of the standard supplied in 1923, it required 3.52 gallons per [fol. 110] thousand cubic feet of gas. In making the proposed 650 B. T. U. gas it will require 4.50 gallons. The total send out is taken at 21,984,891 M cubic feet (Plaintiff's Exhibit 258). Of this, in 1923, 15,300,373 M went to the consumers of the Brooklyn Union. The subsidiaries utilized for their own consumers 4,942,894. The unaccounted for gas amounted to 2,323,321 (Plaintiff's Exhibit 263). The result of plaintiff's calculation shows a probable cost of operation under the statute of 95.06 cents per thousand cubic feet of gas.

Counsel for defendants have adopted a process of calculation by which they evolve the contention that this cost of manufacture per thousand cubic feet should be 78.33 cents. In so doing, however, (a) they adopt the cost of manufacture [illegible] the Metropolitan plant as the standard to govern all cost of manufacture by the plaintiff, to the exclusion of any consideration of other plants; (b) they allow only five per cent. for unaccounted for gas; (c) they allow only 3.52 gallons of gas oil in the manufacture of a thousand cubic feet of gas but the evidence establishes that this quantity of oil produces gas with a lower B. T. U. content, while in order to produce gas with a 650 B. T. U. content it is necessary to utilize 4.50 gallons of oil per thousand cubic feet; (d) they average repairs and closely criticise the miscellaneous and general expense account, the reserve for workmen's compensation, the rent of properties leased, and eliminate the item of uncollectible bills and some other small items; (e) they draw attention to the fact that the plaintiff buys gas appliances and sells them to its own consumers, as well as to the subsidiary corporations to be in turn sold to the latter's consumers. This branch of plain-
[fol. 111] tiff's activity is carried on along with its major business of gas making and as an incident thereto. An attempt is made by the defendants to segregate the data with reference to the sale of gas appliances.

I have considered these various matters and my views with reference to most of the items have already been expressed. As to the sale of gas appliances, I see no error in the treatment of that item as found in Plaintiff's Exhibit 264. Appropriate credit is there given for such income as the plaintiff thereby receives. Indeed, after analyzing these figures, I do not appreciate any substantial difference in the result obtained by defendant's method of analysis.

Applying the views which I have above expressed, I arrive at the following conclusion as to the cost of operation:

Plaintiff claims as its cost per thousand cu. ft. to manufacture 650 B. T. U. gas as required by the statute		95 06 cents
I disallow—		
the expense of special inspection	$108,688 23	
the cost of pending litigation	94,524 89	
certain stated items in the gross earnings tax	27,629 00	
Making a total of	$230,842 12	
which is the equivalent per thousand cubic feet of		1.50 cents
Leaving		93 56 cents

[fol. 112] which I have fixed as the cost of manufacturing 650 B. T. U. gas required by the statute per thousand cubic feet, and which includes the cost of maintaining the gas appliance branch.

It will appear from Plaintiff's Exhibit 264 that in 1923 the plaintiff derived an income from the sale of residuals and gas appliances in the amount of $343,943 which is the equivalent of 2.24 cents per thousand cubic feet of gas sold. The entire operating income of plaintiff at the statutory rate (modified by the lower price at which plaintiff supplies gas to the City of New York) would be $1.0206 per thousand cubic feet of gas sold at a cost of 93.56 cents per thousand cubic feet.

At the time this statute took effect, plaintiff was delivering 580 B. T. U. gas, although by the terms of the order of the Public Service Commission then subsisting (Plaintiff's Exhibit 80) only 537 B. T. U. gas was required. There is no exhibit showing the cost of manufacturing and distributing this standard of gas, yet the data is in evidence from which the same may be calculated. The evidence shows that the first step in the manufacture of carburetted water gas is the decomposition of steam, freeing the hydrogen, which combined with the carbon of coal or coke, produces hydrogen-carbonic oxide gas, known as blue gas because it burns with a blue flame. It gives no light. This gas has a heating value of about 300 B. T. U. (p. 717). By the addition of oil to the blue gas, the thermal content is

increased (p. 718), which is in turn again lost to some extent in transmission by reason of condensation (p. 773). Each gallon of oil in a thousand feet of carburetted water gas increases the thermal content 80 B. T. U. per cubic foot (p. 901). The decrease in thermal content resulting [fol. 113] from condensation necessitates the manufacture of gas of a higher thermal content than that required to be furnished. Consequently, in order to furnish 537 B. T. U. to the consumer, it is necessary that the gas at the works should contain 550 B. T. U. per cubic foot (p. 2653, et seq.). Taking the lower cost of oil, rather than the price actually paid during 1922 and 1923, the cost of manufacture and delivery of 537 B. T. U. gas would be approximately 86.85 cents per thousand cubic feet, disregarding any increase in the required quantity of coal and the loss of volume from the decrease in the quantity of oil.

Rate of Return

Expert evidence was introduced by the plaintiff to the effect that a return of eight per cent. is normal, in view of all the contingencies surrounding the conduct of a business of this character. This seems in accord with prevailing conditions of which the court will take judicial notice, and seems also to be in harmony with current adjudications. The defendants offered no evidence to the contrary. In a very recent case (Ohio Utilities Company vs. Public Utilities Commission of Ohio, decided March 2nd, 1925), the Supreme Court held a return of five per centum inadequate and confiscatory.

Dr. Hollander, called by the plaintiff as an expert witness, testified that in his opinion prevailing commodity prices would remain substantially staple for a number of years. In disclosing the mental processes by which he arrived at this conclusion, the witness indicated, that, as a learned and distinguished political economist he had studiously addressed himself to the comprehension and analysis [fol. 114] of the problem. If this forecast of Professor Hollander be correct, we must accept the present standards as substantially normal now, just as in the pre-war days we accept the standards then prevailing as normal then. I have nothing before me indicating a contrary view.

Yield to Plaintiff

I construe this statute as requiring plaintiff to deliver to the consumer gas containing the statutory thermal content. There is a loss of thermal content in the transmission of gas due to condensation, among other things, to which allusion has previously been made. It follows that the gas at point of manufacture must contain a greater thermal content than prescribed by the statute in order to insure the required content when used by the consumer. Recognizing this factor and adopting 15,300,373 M cubic feet as the aggregate sales of the plaintiff, with reference to which there is no issue, I find the yield to plaintiff in the several alternatives would be as follows:

Operating under the statute, the cost of manufacture and distribution of 650 B. T. U. gas, being 93.56 cents per thousand cubic feet, while the income from the sale of gas, gas appliances and residuals aggregates $1.0206, the yield would be 8.5 cents per thousand cubic feet, or $1,300,531.71 per annum. This is the equivalent of 2.364 per cent. upon $55,000,000 the rate base as of June 1st, 1923.

Adopting the rate base as of December 31st, 1923, namely, $58,092,513, this income would be the equivalent of 2.24 per cent.

Should the plaintiff continue to manufacture and distribute the standard of gas supplied in 1923 (587 B. T. U.), [fol. 115] the cost, reduced by the smaller quantity and lower price of gas oil utilized, would be 90.49 cents. The sale of this gas at the price nominated in the statute would yield $1,770,253.16 per annum, which is the equivalent of 3.22 per cent. upon $55,000,000, the rate base as of June 1st, 1923.

If the rate base as of December 31st, 1923, be adopted, namely $58,092,513, the yield for the manufacture and distribution of the standard of gas delivered in 1923 would be 3.05 per cent.

If, through any construction of this statute, it should transpire that the plaintiff was permitted to supply to its consumers 537 B. T. U. gas, costing 86.85 cents as previously shown, the sale at the price nominated in the statute would yield $2,327,187 per annum, which is the equivalent of 4.23 per cent. upon $55,000,000, the rate base as of June

1st, 1923, or 4 per cent. upon $58,092,513, the rate base as of December 31st, 1923.

Resolving all doubts against the plaintiff, I am convinced that property of the plaintiff will be confiscated by operation of the statute in question. Indeed, it is doubtful whether in any view of the situation the yield would be sufficient to meet the recurring payments of interest upon outstanding bonds.

Contingency Account

It appeared in evidence that plaintiff maintains upon its books a contingency account designed as a protection against unusual losses, calamities or expenses. In establishing this account the Board of Directors of the plaintiff corporation passed a resolution substantially to the effect that nothing should be charged against this account unless [fol. 116] specifically approved by the Board. This account now amounts to approximately $13,000,000. It is urged by the learned Attorney General that event though operation under the statute may fail to yield an income to the plaintiff, yet this will not constitute confiscation of plaintiff's property until, by virtue of the losses so incurred through operation under the statute, this contingency fund shall have become exhausted. I am unable to concur in this view. The reserve represented by this account is the property of the plaintiff. In the exercise of their discretion the Board of Directors have chosen thus to safeguard the capital investment of the stockholders against an unforeseen calamity. In the exercise of that same discretion it would be competent for the Board to reduce the reserve, recognizing that it is after all an accumulation of undistributed profits, and declare a dividend payable out of the same. Indeed the expense of maintaining this litigation and the expenses incurred through the readjustment of appliances upon consumers' premises necessitated by the order of the Public Service Commission of August 30, 1922, might with propriety and in the exercise of that discretion be charged against the same. I am unable to discern by what authority the State may confiscate a surplus and yet be deterred from confiscating capital. It is certainly true that if the cost of manufacturing and distributing gas were unconscionably increased or the apparent earnings of the plaintiff

were unconscionably decreased by the maintenance of an extravagant contingency reserve charged into operating expenses, this might be the proper subject of judicial review. No evidence, however, has been submitted to me tending to show such a condition of affairs. The reserve does not exist as a fund, but only as a part of the general [fol. 117] assets of the plaintiff, and is not charged into operating expenses.

Going Concern Value

While there is authority for the proposition that going value may be based upon the financial history of the company, though not in the sense that losses are to be thereby capitalized, yet the plaintiff disclaims any effort to adopt either the basis of early losses or that of the financial history of the company. Indeed, there is no evidence in the case to support such a calculation. The Supreme Court has said:

That there is an element of value in an assembled and established plant doing business and earning money over one not thus advanced, is self-evident. The element of value is a property right, and should be considered in determining the value of the property, upon which the owner has a right to make a fair return when the same is privately owned although dedicated to public use."

Des Moines Gas Co. v. Des Moines, 238 U. S., 153, see page 165.

As stated by the statutory court in New York Telephone Co. v. Prendergast:

"The amount may be difficult of ascertainment, but that going concern value exists is self-evident."

Running all through the cases, there seems to be the doctrine that no hard-and-fast rule exists by which going concern value is to be calculated. There is, however, a definite recognition of the difference in value between a concern without consumers and a concern that is prosperous with its consumers. While this is not to be confused with the term "good will," nor to be treated as synony- [fol. 118] mous with that term, yet the existence of going

value as intangible property is recognized in estimating the cost of reproduction. Apparently, the conclusion arrived at should reflect the sound judgment of the court upon all of the facts presented by the evidence in each case.

Plaintiff rests its contention upon the testimony of Colonel Miller, who expressed the opinion that the going concern value of this plaintiff aggregated $16,055,200 (pp. 4054, 4075). Colonel Miller arrived at this figure by adopting the meters in use as a unit, 458,720 in number, and by estimating that each consumer added a value of $35 to the value of the plant inert. The witness predicated this opinion upon a condition of affairs without precedent in his experience, and I think we may be permitted to add, without precedent at all. He assumed to visualize a community such as the Borough of Brooklyn, covering a territory of approximately seventy-two square miles, having a population of over two millions, in which the service of gas had never been installed. He estimated the cost of educating that community to the advantages and disadvantages of gas on June 1st, 1923, upon the assumption that the community enjoyed all other utilities, such as water and electricity, but as yet had not experienced the service of gas, and further testified:

"I mean that in my opinion a property similar to the Brooklyn Union Gas Company would be worth more if the consumers were attached on June 1st, 1923, than it would be if there were no consumers but the company was ready to deliver gas. I mean that in my opinion a purchaser of the property would pay $16,055,200 more for the property if the consumers were attached and it was run economically [fol. 119] than he would if they were not attached. The difference between the value of the property in my opinion with the business attached and the value of the property without the business attached is the cost of annexing the business, such cost being $16,055,200 (P. 4429). What guides me is the actual amount we spent in American cities to intensively build up the business, the business being there already, but just to increase it. That is my guide and that is what I based all of this estimate on." (P. 4554.)

Such is substantially the evidence presented upon this question, except that the plaintiff acquired the properties of the several vendor companies each as a going concern, thereby eliminating whatever factor of competition may have previously existed among the vendors, and has thus unified the properties, and except also that the outlays of plaintiff in the year 1923 indicate that promotion expenses, cost of setting meters, appliances, etc., averaged about $33 per meter during that year. Colonel Miller's attitude is substantially to the effect that the hypothetical situation submitted to him for an opinion was unprecedented in his experience, although he had repeated experience in taking over going concerns and then by intensive effort broadening their activities, enlarging their output and annexing new consumers. Guided by the amount which he had actually expended in thus developing going concerns, he expresses the opinion that the sale or exchange value of a plant without consumers would be increased at the rate of $35 for each meter installed, when operated economically as a going concern.

Counsel for plaintiff has very industriously collected allowances for going value in court cases and in commission cases, showing what percentage upon the total prop- [fol. 120] erty value was allowed in each instance. This compilation would indicate that where these allowances have been made, the quantum has averaged about twelve or thirteen per cent. of the property value. The method of measuring going concern value adopted by Colonel Miller, however, seems somewhat novel and without precedent in any of the adjudications to which my attention has been directed. The hypothesis is so difficult to conceive and so contrary to general experience that the imagination falters. If one were to indulge in such an imaginative picture, it would seem more readily conceivable that the demand by the community would greatly overtax the production capacity of the company, rather than to assume the necessity for an outlay of $35 to educate each consumer and convince him of the desirability of utilizing plaintiff's output. The more I have considered this evidence of Colonel Miller the more reluctant I have become to adopt his estimate for the purpose of evolving some fixed allowance of going concern value. It cannot be doubted, I think, that going concern value exists in the instant case and may

properly be allowed as a part of the cost of reproduction. The uses of gas have varied since the plaintiff was incorporated, and while it may be recognized that little is to be done by way of education in the use of gas as an illuminant, much has been done, and is being done, by way of promoting the use of gas as a fuel, not only for domestic purposes, but in manufacturing industries. I am of the opinion that, even disregarding the testimony of Colonel Miller, the authorities would justify an allowance upon the balance of the evidence in the case in the quantum to which I have alluded, approximately twelve per cent. of the property value, or about $6,000,000. On the other hand, in Des [fol. 121] Moines Gas Company vs. City of Des Moines (supra), this factor of going concern value was recognized, and yet no specific allowance was made by way of valuation. I have, however, chosen to eliminate any allowance for going concern value in ascertaining reproduction cost or in adopting a rate base. All doubt is thereby resolved against the plaintiff and the statute has still been shown clearly confiscatory.

Construction of Statute

It remains to consider the effect of this conclusion upon other provisions of the statute, and to analyze the conflicting views of counsel with reference thereto. The plaintiff does not challenge the power of the Legislature to require it to furnish 650 B. T. U. gas, nor does it contend that distribution of gas of this standard is impracticable, nor again does the plaintiff characterize the statutory standard as unwise, wasteful or unreasonable. The difficulty of which plaintiff complains is the danger to life and health involved in distribution of gas of this standard without first making appropriate readjustments in the appliances used by each consumer. That this danger is real and in no sense imaginary or exaggerated, is indicated by the fact that the evidence of the plaintiff in this regard is uncontradicted. That the readjustments to which plaintiff refers will require a substantial period of time and involve a substantial outlay of money is indicated by the fact that the prior adjustments cost the plaintiff over $100,000, and consumed many weeks. The provision, "This act shall take effect immediately" is construed by the plaintiff to require the plaintiff

to deliver gas of the new standard after midnight upon the [fol. 122] day when this act took effect, June 2nd, 1923. If the statute be thus construed, the plaintiff, on the one hand, would not have been permitted to deliver the gas then stored in its holders and mains, and, on the other hand, would not have been afforded opportunity to make the readjustments required to safely deliver 650 B. T. U. gas. The provision as to standard would, therefore, become incapable of performance.

It is urged, however, by the Attorney General that if the provision as to standard be incapable of performance, the effect would be to relegate the plaintiff to the order of the Public Service Commission dated August 30th, 1922 (Plaintiff's Exhibit 80), which was in operation at the time the act was passed. It may be doubted whether that order of the Public Service Commission still subsists. I am inclined to the view that the order of the Public Service Commission dated June 4th, 1923, requiring the plaintiff to comply with the provisions of the statute operated to supersede the order of August 30th, 1922. Again, this view would not contemplate a revival of the order in its entirety, but only so much thereof as prescribed a standard. Finally, it has been shown that the rate of One Dollar per thousand cubic feet of 537 B. T. U. gas would be confiscatory. The suggestion must be rejected.

The order of the Public Service Commission requiring plaintiff to comply with the statute was dated June 4th, 1923, two days after the statute became effective. This order is annexed to and made a part of the answer of the defendants Public Service Commissioners and reads in part as follows:

"Ordered, That each and every gas corporation engaged in the business of manufacturing, furnishing or selling il- [fol. 123] luminating gas in The City of New York be and hereby is required forthwith to comply with such statute, and be and hereby is authorized to file and publish a new schedule of its rates for gas effective forthwith in accordance with said statute."

The Commission seems to have based its order upon the construction of the statute adopted by the plaintiff, namely, that plaintiff was required to furnish gas of the new stand-

ard after midnight of the day the act took effect. Both the Attorney General and counsel for the defendants, Public Service Commissioners, however, now advance the theory that there should be read into this statute an intention by the Legislature to allow a reasonable time to the plaintiff and other gas companies thereby affected within which to make the necessary adjustments of appliances, and that the provision, "This act shall take effect immediately" should be construed accordingly. Such a construction, or indeed, the inclusion of express language to that effect in the statute, would leave the plaintiff in a position where is could not know in advance whether or not its act was in violation of the statute. "The criminality of an act cannot depend upon whether a jury might think it reasonable or unreasonable." Toser vs. U. S., 52 Fed. Rep. 917; Railway Co. vs. Dey, 35 Fed. Rep. 866. I reject this view.

It is a settled rule of statutory construction that an original statute with all its amendments must be read together, and that in considering an amendatory act the legislative intention should be sought by joining the amendment with the act to which it is an addition and considering the whole as one act passed at the same time Lyon vs. M. R. Co., 142 N. Y. 298.

[fol. 124] The act in question is entitled "An Act to Amend the Public Service Commission Law in Relation to the Charge for Illuminating Gas in Cities Containing a population of One Million or over." The amendment introduced a new section containing the provision as to standard and the provision as to rate in a single sentence. Prior to the passage of this amendatory act, Section 66 of the Public Service Commission Law vested in the Commission power to prescribe the standard of quality, and Section 72 vested in them power to regulate the price to be charged consumers. This amendatory act has limited the discretion of the Commission as to standard and likewise as to price. While the form of the statute is not such that it specifically amends the sections above referred to, in substance that is its effect. Viewing the statute thus amended as one act, we note that it creates a commission, prescribes its jurisdiction, nominates the utilities over which that jurisdiction is to be exercised and confers power to prescribe a standard not less than 650 B. T. U. gas per thousand cubic feet, and power

to regulate the price to be charged consumers not more than One Dollar per thousand cubic feet. The statute would thus be viewed as an indirect exercise of the police power of the state, as opposed to a direct exercise thereof, such as is found in Chapter 125 of the Laws of 1906 (The Eighty Cent Gas Law). This construction would attribute to the Legislature a realization that the Commission was in existence, possessing the regulatory powers expressed in the statute. The provision, "This act shall take effect immediately" would be deemed to impose an immediate duty upon the Commission to carry the law into effect, as thus amended, through appropriate orders, addressed to these utilities, making due allowance for the time to be consumed and the preparation to be made to conform to the new order of [fol. 125] things. The provision as to rate having been found confiscatory, that as to standard would be deemed to survive while the orders of the Public Service Commission requiring compliance with the standard as well as its further orders, fixing new rates, would be subject to judicial review as provided in the original statute. I should be disposed to adopt such a construction were it not that the learned counsel for plaintiff has pointed out that even so, upon the authority of Bronx Gas and Electric Company vs. P. S. Comm., 108, Misc., 180 s. c. 190, A. D. 13, the further provision of the statute would survive, namely, "The Public Service Commission, notwithstanding any other provision of this chapter, shall not allow a rate or charge in the case of such cities in excess of such sum." As a result, we should have a statute requiring the delivery of 650 B. T. U. gas and divesting the Public Service Commission of power to allow a constitutional rate, inferentially reserving that power to the legislature itself. Morrell vs. Brooklyn Borough Gas Company, 195, A. D. 1 s. c. 231 N. Y. 398. This would leave the plaintiff without restraint as to price to be charged its consumers. Surely such a construction would be at variance with the clear purpose of the act. It must therefore be rejected.

Aside from that difficulty, however, it may well be doubted whether the statute is capable of any construction whereby the provision as to standard would be deemed severable from that as to rate. The defendants urge that either will survive if one be found vulnerable, while plaintiff contends

that the two must stand or fall together. In Queens Gas Co. vs. Prendergast, et al., the Special Master construed these provisions as severable, but the United States District Court for the Southern District of New York (Winslow, J.) held to the contrary.

[fol. 126] The provision as to standard is incapable of performance and the rate has been shown confiscatory. I am of the opinion that the entire statute is unconstitutional. Perhaps the doubt as to legislative intent concerning the survival of either provision to the exclusion of the other is sufficiently pronounced to support the same conclusion under the authority of Butts vs. Merchants Transportation Co., 230 U. S. 120. If the court shall concur in the view of Judge Winslow, the same result follows.

I am of the opinion that were the plaintiff required to furnish to its consumers at the maximum price prescribed by the statute gas of the standard nominated in the statute, or gas of the standard supplied by the plaintiff during the year 1923, or gas of the standard required by the order of the Public Service Commission in operation at the time the statute was passed, the plaintiff would, in either event, be deprived of property without due process of law. I am of the opinion that the statute violates Section 1 of Article 14 of the Federal Constitution. I am of the further opinion that the provision of the statute with reference to standard is incapable of performance and that the statute is void in its entirety. I recommend that a decree enter accordingly.

Herewith will be found my findings of fact and conclusions of law in accordance with the views I have expressed.

Almet Reed Latson, Special Master.

[fol. 127] In United States District Court

[Title omitted]

Report of the Special Master

To the Honorable Judges of the United States District Court for the Eastern District of New York:

I, the undersigned, the Special Master appointed by the Honorable Marcus B. Campbell, United States District

Judge, by an order entered on the 11th day of October, 1923, "to take the testimony and evidence upon the issues herein, make all needed computations and report to the Court my findings of fact and conclusions of law, together with the evidence, for the advisement of the Court";
[fol. 128] Do hereby respectfully report that, having been attended by counsel as below stated, I proceeded to take the proofs submitted and filed, together with a stipulation signed by the various solicitors waiving the signatures of the various witnesses to their several depositions and further waiving the filing of the original exhibits marked in evidence.

There appeared before me the following: For the plaintiff—Cullen & Dykman, Solicitors (William N. Dykman, Jackson A. Dykman, Timothy J. Shea, of Counsel); for the defendants William A. Prendergast, William R. Pooley, Charles Van Voorhis, Oliver C. Semple and James A. Parsons, constituting the Public Service Commission of the State of New York—Charles G. Blakeslee, Solicitor (Edward M. Deegan, Melvin L. Krulewitch, of Counsel); for the defendant Carl Sherman, as Attorney-General of the State of New York—James A. Donnelly, Solicitor (Clarence R. Cummings, Harry Hertzoff, of Counsel).

Upon the proofs as taken I find and report as follows:

1. Plaintiff, The Brooklyn Union Gas Company, was incorporated on or about September 9, 1895, under and pursuant to the provisions of the Transportation Corporations Law of the State of New York for the purpose of manufacturing and supplying gas for lighting the streets and public and private buildings in the former City of Brooklyn, now the Borough of Brooklyn, City of New York.

2. In October and November, 1895, plaintiff, pursuant to the Stock Corporation Law, Chapter 564 of the Laws of 1890 of the State of New York, as amended, purchased the [fol. 129] property, rights, privileges and franchises of The Nassau Gas Light Company, The Peoples Gas Light Company, Metropolitan Gas Light Company, The Williamsburgh Gas Light Company, The Brooklyn Gas Light Company, The Fulton Municipal Gas Company and The Citizens Gas Company.

3. Prior to November 4, 1895, plaintiff had no gas manufacturing plant, street mains, services or meters but became possessed of such properties through the purchase from the above vendor companies.

4. The Brooklyn Gas Light Company was organized in the year 1825, commenced the erection of a gas manufacturing plant and the delivery of gas in and about the year 1849.

5. On November 4, 1895, when the property of said Company was purchased by the plaintiff, The Brooklyn Gas Light Company, owned a gas plant capable of making coal gas and water gas of 5,500,000 cubic feet daily capacity and 72.24 miles of mains of various sizes.

6. Approximately eleven months after the purchase of said properties, the manufacturing plant formerly owned by the Brooklyn Gas Light Company was shut down; subsequently dismantled and later the land on which it stood was disposed of by the plaintiff.

7. The Williamsburg Gas Light Company was organized in the year 1850; commenced the erection of a gas manufacturing plant and the delivery of gas in and about the year 1850.

8. On November 4, 1895, when the property of said Company was purchased by the plaintiff, The Williamsburg Gas [fol. 130] Light Company owned a gas plant capable of making coal gas and water gas of 6,300,000 cu. ft. daily capacity and 171.75 miles of mains of various sizes.

9. The Peoples Gas Light Company was organized in the year 1864; commenced the erection of a gas manufacturing plant and delivery of gas in and about the year 1869.

10. On November 4, 1895, when the property of said Company was purchased by the plaintiff The Peoples Gas Light Company, owned a coal gas plant of unknown capacity and 57.81 miles of mains of various sizes.

11. For some time prior to the year 1895, The Peoples Gas Light Company did not operate its manufacturing plant.

12. After November 4, 1895, the manufacturing plant of The Peoples Gas Light Company was dismantled and subsequently the land on which the plant stood was sold by the plaintiff.

13. The Citizens Gas Company was formed in the year 1892 and grew out of a merger of The Citizens Gas Light Company organized in the year 1858 and the Union Gas Light Company organized in the year 1861.

14. On November 4, 1895, when the property of said Citizens Gas Company was purchased by the plaintiff, said Company owned two manufacturing plants, one formerly belonging to The Citizens Gas Light Company having a daily capacity of 2,000,000 cubic feet, and one formerly belonging to the Union Gas Light Company having a daily capacity of 500,000 cubic feet and 96.25 miles of mains of varying sizes.

[fol. 131] 15. Subsequent to 1895, the manufacturing plant formerly owned by the Union Gas Light Co. was dismantled and the land is now used as a holder station by the plaintiff.

16. The Metropolitan Gas Light Company was organized in the year 1871; commenced the erection of a gas manufacturing plant and the delivery of gas in and about the year 1871.

17. On November 4, 1895, when the property of said Company was purchased by the plaintiff the Metropolitan Gas Light Company owned a gas plant capable of making coal gas and water gas of 2,000,000 daily capacity and 67.57 miles of mains of various sizes.

18. The Nassau Gas Light Company was organized in the year 1869; commenced the erection of a gas manufacturing plant and the delivery of gas in and about the year 1870.

19. On November 4, 1895, when the property of said Company was purchased by the plaintiff, The Nassau Gas Light Company owned a gas plant capable of making coal gas and water gas of 5,000,000 daily capacity and 137.30 miles of mains of various sizes.

20. The Fulton-Municipal Gas Light Company was organized in the year 1879; commenced the erection of a gas

manufacturing plant and the delivery of gas in and about the year 1879.

21. On November 4, 1895, when the property of said Company was purchased by the plaintiff, The Fulton-Municipal Gas Light Company owned a gas plant capable of making water gas of 5,000,000 daily capacity and 136.52 miles of mains of various sizes.

[fol. 132] 22. Each of the corporations hereinbefore named and their predecessors had, prior to the purchase above described, obtained the consent of the municipal authorities to lay conductors for conducting gas through the streets, lanes, alleys and squares in the former City of Brooklyn, now the Borough of Brooklyn, City of New York, and each at the same time of such purchase had constructed and owned manufacturing plants and stations and mains and services and was engaged in the distribution and sale of gas. Each of such companies had, prior to November 4, 1895, secured consumers sufficient in number and in quantity of gas consumed to constitute an established and remunerative business.

23. Prior to November 4, 1895, the various vendor companies had been competing companies.

24. 1,017 miles of mains now exist in 905 miles of streets. The greater portion of this excess is due to the fact that prior to November 4th, 1895, more than one vendor corporation had laid mains in the same street. Since that time, plaintiff itself has installed certain second mains in the same street where an increase in demand or subservice conditions rendered this desirable in its opinion. Transmission mains necessarily lie in the same street as distribution mains.

25. Prior to November 4, 1895, the various vendor companies engaged in a rate war or cutting of rates for gas.

26. Plaintiff at the request of defendants produced all of the books of account, records and minutes of the respective boards of directors of the said vendor companies in the possession of plaintiff and were as follows:

[fol. 133] Williamsburgh Gas Light Company

Cash Books:	Nov. 15, 1850—Dec. 1857.
	Jan., 1858—Dec., 1862.
	C Jan., 1863—May 31, 1868.
	C June 1, 1868—Dec. 31, 1868.
	D Jan. 2, 1869—Mar. 31, 1873.
	D Apr. 1, 1873—Dec. 31, 1874.
	E Jan. 2, 1875—Dec. 31, 1880.
	F Jan. 3, 1881—Dec. 31, 1884.
	G Jan. 2, 1885—Dec. 31, 1890.
	H Jan. 2, 1891—Nov. 2, 1895.
Journals:	B Jan. 1, 1855—Dec. 31, 1862.
	C Jan. 1, 1863—Dec. 31, 1868.
	D Jan. 1, 1869—Dec. 31, 1874.
	E Jan. 1, 1875—Dec. 31, 1880.
	F Jan. 1, 1881—Dec. 31, 1884.
	G Jan. 1, 1885—Dec. 31, 1890.
	H Jan. 1, 1891—Oct. 31, 1895.
Ledgers:	A 1850—1855.
	B 1855—Dec. 31, 1862.
	C 1863—Dec. 31, 1868.
	D 1869—Dec. 31, 1874.
	E 1875—Dec. 31, 1880.
	F 1881—Dec. 31, 1884.
	G 1885—Dec. 31, 1890.
	H 1891—Oct. 31, 1895.
Miscellaneous:	Stock Holders.
	Certificate Receipt Book.
	Cost Statements.
	Stock Ledger.
	Certificate—Interest Dividend.
	Index Consumers Ledger.
	Manufacturing Costs.
Miscellaneous:	Comparative Statements.
	Ledger E Index.
	Ledger F Index.
	Comparative Statement.

[fol. 134] Citizens Gas Company of Brooklyn

Journals:	April 1, 1892—Oct. 31, 1895.
Ledgers:	Special Accounts Apr. 1, 1892—Oct. 31, 1895.
Miscellaneous:	Stock Subscription Ledger.
	Invoice Book No. 1.
	Engineer's Statements.
	Stock Dividend Book No. 3.
	Daily Works Reports.
	Dividend & Interest Record.
	Dividend & Interest Record.
	Stock Ledger.
	Stock Ledger.

Union Gas Light Company

Cash Book:	Nov. 22, 1861—Dec. 31, 1880.
Ledgers:	Dec. 26, 1861—1885.
	April 1, 1892—Nov. 4, 1895.
Miscellaneous:	Stock Ledger.

Citizens Gas Light Company

Ledger:	Apr. 1, 1892—Nov. 4, 1895.

Metropolitan Gas Light Company

Journals:	A Dec. 30, 1871—Oct. 31, 1895.
Ledger:	A Dec. 30, 1871—Oct. 31, 1895.
Miscellaneous:	Stock Ledger.
	City Lighting.
	Executive Committee Books—Bills Payable.
	Statements.
	Stock Ledger Balances.
	Stock Ledger Balances.
	Statements.
	Stock Certificate Receipt Book.
Miscellaneous:	Stock Ledger Balances.
	Balance Book.

[fol. 135] Fulton Municipal Gas Company

Cash Books: #9 Nov. 16, 1886—May 2, 1888.
10 May 3, 1888—May 31, 1892.
11 June 1, 1892—Mar. 31, 1895.

Journals: 1 Dec. 15, 1874—Oct. 20, 1882.
4 July 20, 1887—Nov. 15, 1895.

Ledgers: 1 Dec. 15, 1879—Apr. 14, 1888.
B Aug. 14, 1888—Nov. 5, 1895.

Miscellaneous: Production Figures.
Consumers Ledger.
Meter Repair Record.
Manufacturing Reports.
Manufacturing Reports.
Manufacturing Reports.
Stock Ledger B.
Service Index #2.
Cost Statement #3.
Production Record.
Gas Consumed & Sold—Fulton & Nassau.
Monthly Statements.

Brooklyn Gas Light Company

Cash Books: 1—Apr. 10, 1849—July 31, 1851.
3—July 1, 1852—May 5, 1855.
4—May 5, 1855—May 31, 1860.
5—Sept. 5, 1860—Apr. 29, 1865.
6—May 1, 1865—Jan. 23, 1869.
7—Jan. 30, 1869—Oct. 31, 1874.
8—Nov. 2, 1874—Feb. 2, 1876.
9—Feb. 3, 1876—July 1, 1879.
10—July 1, 1879—Jan. 12, 1885.
11—Jan. 12, 1885—May 31, 1890.

Cash Books: 12—June 2, 1890—Dec. 31, 1893.
13—Jan. 1, 1894—Nov. 4, 1895.

[fol. 136] Journals: A—1849—July 1, 1858.
B—July 29, 1858—Apr. 30, 1866.
C—Apr. 30, 1866—July 30, 1880.
D—Aug. 1, 1880—Oct. 31, 1895.

Ledgers: 1—No entries.
A—1849—1865.
B—Jan. 1, 1866—Nov. 22, 1895.

Miscellaneous:	Balance Book Jan. 1890—Jan. 1895.
	Dividend Record.
	Dividend Record.
	Dividend Record.
	City Lightning.
	Stock Transfer Book.
	Cash Advance Book.
	Diary 1876.
	Diary 1875.
	Salary Receipt Book.
	Diary.
	Diary.
	Daily Report.
	Daily Report.
	Diary 1880.

Nassau Gas Light Company

Cash Books:	A—June 23, 1870—Mar. 31, 1871.
	B—April 1, 1871—Aug. 31, 1875.
	C—Sept. 1, 1875—Jan. 31, 1880.
	D—Feb. 2, 1880—June 30, 1885.
	E—July 1, 1885—May 31, 1890.
	F—June 2, 1890—March 31, 1894.
	G—April 2, 1894—Nov. 4, 1895.
Journals:	A—June 23, 1870—July 6, 1896.
Ledger:	A—June 23, 1870—Nov. 30, 1895.
Miscellaneous:	Stock Ledger:
	Trial Balance Book.
	Trial Balance Book.
[fol. 137]	Trial Balance Book.
	Trial Balance Book.
	Trial Balance Book.
	Manufacturing Cost Records 1873—1893.
	Trial Balance Book.

Peoples Gas Light Company

Cash Books:	A—Apr. 1, 1870—Nov. 30, 1876.
	B—Dec. 1, 1876—Sept. 30, 1883.
	C—Oct. 1, 1883—Nov. 30, 1890.
	D—Dec. 1, 1890—Nov. 4, 1895.
Journal:	A—Nov. 18, 1867—Oct. 31, 1895.
Ledger:	A—June 23, 1870—Nov. 30, 1895.

Books Not Identified as to Company

Miscellaneous: Consumption Book No. 4.
Index Ledger.
Stock Ledger.
Statement Book.
Junior Cash Book.
Stock Ledger.
Stock Holders Index.
Balance Book May 1, 1893—Nov. 4, 1895.

Minute books of the Boards of Directors as follows:

The Brooklyn Gas Light Co.	1825–1895
The Williamsburgh Gas Light Co.	1850—1895
The Citizens Gas Light Co.	1858—1892
The Citizens Gas Co.	1892—1895
The Peoples Gas Light Co.	1864—1895
The Nassau Gas Light Co.	1870—1895
The Metropolitan Gas Light Co.	1871—1895
The Fulton Municipal Gas Co.	1879—1895

[fol. 138] 27. That the ledger balances of the books of the vendor companies were as follows:

The Peoples Gas Light Co.	$1,575,874 40
The Brooklyn Gas Light Co.	2,248,584 21
Metropolitan Gas Light Co.	1,554,327 47
The Nassau Gas Light Co.	2,012,199 83
The Fulton Municipal Gas Co.	3,671,180 23
The Citizens Gas Co.	3,139,163 37
The Williamsburgh Gas Light Co.	2,322,765 84
Total	$16,524,095 35

28. That the books of the various vendor Companies fail to show any credits to the various accounts for property withdrawn from service.

29. During the months of July, August, September and October, 1895, the vendor corporations had outstanding stock of a par value and bonds of a face value aggregating $13,870,000, the market value of which at that time was approximately $20,000,000.

30. In 1896 plaintiff purchased all the bonds and capital stock of Equity Gas Company and paid therefor its First Mortgage bonds of the face value of $500,000. At the time of such purchase Equity Gas Company owned a manufacturing plant which has since been in possession of and operation by plaintiff for the manufacture of gas distributed and sold through plaintiff's mains and services to the inhabitants of certain wards of the City and Borough of Brooklyn.

31. An accountant and an engineer, qualified by experience to express an opinion upon the subject, called as witnesses on behalf of plaintiff, testified after an examina-
[fol. 139] tion of such books of the vendor corporations as were available that it is impossible to determine therefrom the original cost of construction of the property deemed to have been acquired by the plaintiff from the said vendor corporations.

Defendants for the purpose of proving the original cost of construction of said property introduced said books in evidence and called as witnesses two accountants.

One of the accountants called on behalf of defendants testified that he had examined one account entitled "Construction" of The Williamsburg Gas Light Company for a period of eleven years, January 1, 1885 to November 4, 1895, and that, after the restoration of the amount annually charged off to profit and loss, this account shows substantially the cost of the items mentioned in it, excluding meters, services and real estate and the items entered in four other capital accounts found in the books. This witness stated he was not prepared to swear that the account which he had examined contained the full cost even of the items contained in it. The witness thus expressly excluded mains, services and meters acquired by plaintiff in 1895 from this company and confined his testimony to the period from 1885 to 1895. The witness did not examine the operating accounts and disclaimed any knowledge of contemporary methods of accounting or the accounting methods of the particular company.

Defendants called seven employees of plaintiff who had been in the employ of The Nassau Gas Light Company,

Metropolitan Gas Light Company, The Brooklyn Gas Light Company, The Fulton Municipal Gas Company, The [fol. 140] Citizens Gas Light Company, The Williamsburg Gas Light Company and The Citizens Gas Company respectively. These witnesses stated their recollection of the equipment in the plants on November 4, 1895.

The other accountant called on behalf of defendants examined one account of The Nassau Gas Light Company entitled Construction and testified that in his opinion this account shows substantially the cost of construction of items entered in it excluding services and meters, street mains, real estate, office building and stable building. He could not, however, state the cost of a number of items of property which the witness formerly employed by that company and called by defendants testified were in existence on November 4, 1895.

No evidence was offered by defendants concerning the books of any of the vendor companies other than The Nassau Gas Light Company and The Williamsburg Gas Light Company.

The actual original cost of construction of property acquired by plaintiff on November 4th, 1895, cannot be established. The evidence furnishes data for two methods of estimating such cost.

(a) At the time these properties were acquired by the plaintiff, November 4th, 1895, journal entries upon the books of the plaintiff recording the transactions indicated a valuation, inclusive of land, but exclusive of franchises, of $25,749,731.93. The net additions to the fixed capital of the plaintiff between November 4th, 1895, and June 1st, 1923, appear from their books of account to aggregate $20,967,468.01, from which must be deducted withdrawals of capital during that period not entered upon the books, but fixed by [fol. 141] stipulation between counsel at $4,000,000. These figures would indicate an original cost of $42,717,199. This, however, includes such properties as are owned by the plaintiff, but used by its subsidiary companies. It is likewise impossible to establish the cost of these properties. Calculated, however, from Defendant's Exhibit 46, such cost would be approximately ten per cent or $4,200,000. This method of analysis would lead to the opinion that the

original cost of the property owned by the plaintiff on June 1st, 1923, exclusive of property used by its subsidiaries, was $38,517,199.

(b) Plaintiff offered the opinion of a qualified engineer on the amount which the properties acquired by the plaintiff on November 4th, 1895, in so far as the same were capable of general description, ought to have cost on the basis of the average price prevailing during the period when the various units were apparently constructed. This amount was $23,976,790, exclusive of land, franchises, working capital and any allowance for going concern value. The land was carried upon the books of the vendor corporations at $2,619,226. Adding this, as well as the net additions to capital between November 4th, 1895, and June 1st, 1923, as above shown, namely, $16,967,468, the original cost would seem to be $43,563,484, from which again we deduct the property allocated to the subsidiaries, say ten per cent, $4,300,000. By this method of analysis, the original cost of the property of the plaintiff owned on June 1st, 1923, exclusive of property utilized by the subsidiaries would seem to be $39,263,484.

These figures in each instance exclude any valuation for franchises, working capital or going concern value.

[fol. 142] Defendants offered no evidence on this subject, except that the books of account of the vendor corporations were put in evidence by the defendants.

32. At the date of the organization of plaintiff and commencement of business on or about November 4, 1895, there was in force and effect an act being Chapter 566, Laws 1890, Section 70 of the State of New York, which fixed a maximum price not to exceed $1.25 per thousand cubic feet in cities having a population of 800,000 or over and prescribed standard of illuminating power and purity. The Master takes judicial notice of the fact that in 1890 the population of Brooklyn was 838,547, making the maximum rate therein $1.25 per thousand cubic feet.

On March 15, 1897, plaintiff entered into a contract with the City of Brooklyn, by the terms of which plaintiff agreed to sell gas to private consumers in the City of Brooklyn during the year 1897 at $1.20 per thousand cubic feet; during the year 1898 at $1.15 per thousand cubic feet; during the

year 1899 at $1.10 per thousand cubic feet; during the year 1900 at $1.05 per thousand cubic feet, and during the year 1901 at $1 per thousand cubic feet. At all times since its organization and commencement of business the maximum rate to be charged by plaintiff has been regulated by law.

33. The Common Council of the City of Brooklyn on March 1, 1897, duly adopted a resolution directing the Commissioner of City Works to enter into a contract with plaintiff to light the streets, avenues and public places of the city and on March 15, 1897, the contract authorized by the resolution was made, executed and delivered. By various resolutions of the Common Council of the City of Brooklyn [fol. 143] adopted June 7, August 18, October 25 and December 20, 1897, plaintiff was directed to lay gas mains and to supply gas in the 32d Ward and in certain sections of the 29th Ward of the said city.

34. Plaintiff has, since the date of its organization, owned, possessed, used and enjoyed all the property, rights, privileges and franchises hereinbefore described and has maintained and still maintains mains and services acquired from the companies described in Finding 2 and additional mains and services laid by plaintiff throughout Wards 1 to 28, inclusive, and Ward 32 and parts of Ward 29 of the former City, now the Borough of Brooklyn, and has manufactured, distributed and sold, and still manufactures, distributes and sells gas to the inhabitants of said wards.

35. Plaintiff issued, delivered and paid to the corporations described in Finding 2, in consideration of the sale to plaintiff of the property, rights, privileges and franchises therein described, shares of the capital stock of plaintiff of the par value of $15,000,000 and bonds of plaintiff, secured by a mortgage of its properties and franchises, of the face value of $10,600,000, which stock and bonds were forthwith distributed by the officers of the said corporations to the stockholders of said corporations. The authorized issue of such bonds amounted to the face value of $15,000,000 of which bonds of the face value of $10,600,000 were issued, bonds of the face value of $3,900,000 being reserved for the retirement when due of bonds of equal face value of the corporations named in Finding 2, of which said bonds so reserved there now remain in the possession of plaintiff, for

the purpose of such retirement, bonds of the face value of $264,000.

[fol. 144] 36. Plaintiff has issued, in addition to the securities hereinbefore described, debenture bonds of the face value of $3,000,000, the latter convertible and subsequently converted at par into stock of plaintiff. Plaintiff has further issued debenture bonds of the face value of $7,579,000, also convertible into stock of plaintiff, and first lien and refunding mortgage bonds of the face value of $6,000,000.

37. On July 17, 1908, the Public Service Commission of the State of New York, First District, authorized and approved the increase of the capital stock of plaintiff from $15,000,000 to $18,000,000 and the issue of $3,000,000 of such shares to retire the convertible debenture bonds described in Finding 36 and thereafter capital stock of plaintiff of the par value of $3,000,000 was duly issued to the holders of such convertible bonds and the said bonds retired. On September 9, 1919, the Public Service Commission of the State of New York, First District, authorized the issue by plaintiff of convertible debenture bonds bearing 7% interest of the face value of $2,000,000 and on February 13, 1920, said Commission authorized an increase of the capital stock of plaintiff from $18,000,000 to $20,000,000, such stock to be issued to retire said convertible debenture bonds. On the 10th day of May, 1922, the Public Service Commission of the State of New York authorized the issue by the plaintiff of $6,000,000 face value first lien and refunding mortgage bonds and $5,579,000 convertible debenture bonds and a similar amount of capital stock to retire said debenture bonds upon maturity.

[fol. 145] 38. The capitalization of the plaintiff on June 1, 1923, was as follows:

Capital Stock (authorized $30,000,000.00) issued.....		$18,000,000.00
The Brooklyn Union Gas Co., 5% 1st Consolidated Mortgage Bonds, due 1945.....	$14,736,000.00	
The Citizens Gas Light Co., 5% Consolidated Mortgage Bonds, due 1940.....	264,000.00	
The Brooklyn Union Gas Co., First Lien and Refunding Mortgage 6% Gold Bonds, due 1947	6,000,000.00	
The Brooklyn Union Gas Co., 7% convertible debentures, due 1929	2,000,000.00	
The Brooklyn Union Gas Co., 7% convertible debentures, due 1932	5,579,000.00	
		28,579,000.00
		$46,579,000.00

39. On February 13, 1924, plaintiff duly filed in the office of the Secretary of State of the State of New York a certificate of change of previously issued shares into shares without nominal or par value, pursuant to Section 36 of the Stock Corporation Law of the State of New York, whereby, in place of 300,000 shares all classified as common stock of the par value of $100, plaintiff was thenceforth authorized to have a total number of shares of 600,000, all of which shall be common and without nominal or par value, to be issued in accordance with said certificate as follows:

(a) 360,000 shares of stock without nominal or par value to be issued in exchange for the 180,000 outstanding shares of capital stock having par value by the issuance of 2 shares of stock without nominal or par value for each share having par value.

(b) 40,000 shares of stock without nominal or par value [fol. 146] to be reserved for the purpose of converting and retiring the outstanding $2,000,000 face value 7% convertible debenture bonds dated November 1, 1919, ap-roved by the Public Service Commission of the State of New York on September 9, 1919.

(c) 111,580 shares of stock without nominal or par value to be reserved for the purpose of converting and retiring the outstanding $5,579,000 face value 7% convertible debenture bonds dated May 1, 1922, and approved by the Public Service Commission May 10, 1922.

Said certificate further provided that plaintiff may, if, as and when the Public Service Commission approves, issue and sell the authorized shares without nominal or par value, which are not to be substituted for previously outstanding shares and shares to be issued for the conversion and retirement of outstanding debenture bonds for such consideration as from time to time may be fixed by the board of directors and approved by the Public Service Commission and further that the capital of the plaintiff shall be at least equal to the sum of the aggregate par value of all issued shares having par value plus the aggregate amount of consideration received by the corporation for the issuance of shares without par value, plus such amounts as from time to time, by resolution of the Board of directors, may be transferred thereto.

40. The capital stock, mortgage and debenture bonds of plaintiff were in each instance issued in consideration of money, satisfaction of antecedent indebtedness and property in amount and value apparently equal to the par value of said stock and the face value of said bonds. That such was the opinion of the board of directors of the plaintiff at [fol. 147] the time of the transaction is indicated by the minutes of the meetings of the several boards of directors and the reports of committees conducting these negotiations.

41. On November 4, 1895, plaintiff acquired from the various vendor companies approximately 87,659 service pipes and 113,067 gas meters.

42. At the time of the purchase of property from the vendor corporations there was no inventory taken of the properties so purchased, and an inventory thereof cannot now be established.

43. Plaintiff has shown by appropriate evidence that in these transactions a valuation was given to the several franchises acquired from the vendor companies and that the purchase price paid by the plaintiff for all property acquired included such valuation.

44. On January 1, 1896, plaintiff owned plants and general structures for the manufacture, distribution and sale of illuminating gas having a daily manufacturing capacity of 26,800,000 cu. ft.; holders having a capacity of 13,540,000 cu. ft.; mains as follows:

1½ in.	3,867 ft.
2 in.	8,456 ft.
3 in.	383,039 ft.
4 in.	1,632,391 ft.
6 in.	992,593 ft.
8 in.	308,608 ft.
10 in.	126,341 ft.
12 in.	274,515 ft.
16 in.	75,355 ft.
20 in.	93,683 ft.
24 in.	4,928 ft.
30 in.	474 ft.

[fol. 148] 88,024 services and 113,723 meters which had been acquired in the preceding November from the vendor companies.

45. Plaintiff owns and uses various parcels of land on which are located its plants, holder stations, office and miscellaneous buildings in the Borough of Brooklyn, City of New York.

The six manufacturing plants of plaintiff with the location and manufacturing capacity of each as of June 1, 1923, and December 31, 1923, respectively, are as follows:

Plant	Location	Capacity in cubic feet	
		June 1, 1923	Dec. 31, 1923
Citizens	5th and Hoyt Sts., Gowanus Canal	16,000,000	27,200,000
Metropolitan	12th St. and 2d Ave. Gowanus Canal	24,000,000	27,200,000
Fulton	Nevius and Degraw Sts., Gowanus Canal	13,000,000	13,000,000
Nassau	Kent Ave. and Cross St., East River	21,000,000	24,500,000
Williamsburgh	North 12th St. and Kent Ave., East River	30,000,000	30,000,000
Equity	Maspeth and Porter Aves., Newtown Creek	2,500,000	2,500,000
		106,500,000	124,400,000

Plaintiff on June 1, 1923, owned and operated 26 commercial holders together with pumping stations having a total capacity of 30,957,000 cubic feet and on December 31, 1923, plaintiff owned and operated 27 commercial holders having a total capacity of 35,957,000 cubic feet. Said [fol. 149] holders are used for the storage of gas after its manufacture and before its delivery to the distribution system, plaintiff owning and maintaining at its various works other holders known as relief holders. The locations and capacities of the aforesaid commercial holders are as follows:

Location	Capacity in cubic feet
12th St. and Second Ave	370,000
12th St. and Second Ave	575,000
12th St. and Second Ave	5,000,000
North 12th St. and Kent Ave	460,000
North 12th St. and Kent Ave	1,100,000
Nevins and Degraw Sts	252,000
Nevins and Degraw Sts	284,000
Third Ave. and Degraw St	985,000
Fifth and Hoyt Sts	493,000
Fifth and Hoyt Sts	245,000
Fifth and Hoyt Sts	5,000,000
Front and Gold Sts	580,000
Front and Gold Sts	1,146,000
Plymouth and Gold Sts	296,000
Plymouth and Gold Sts	299,000
Plymouth and Gold Sts	301,000
Rutledge St. and Kent Ave	1,056,000
Skillman St. and Flushing Ave	553,000
Skillman St. and Flushing Ave	539,000
Skillman St. and Flushing Ave	304,000
Wythe Ave. and North 12th St	5,000,000
Wythe Ave. and North 12th St	5,000,000
Scholes and Bogart Sts	1,499,000
Belmont and Alabama Aves	3,250,000
Atlantic Ave. and Ashford St.	500,000
Beaver St., Jamaica	500,000
Keap St. and Kent Ave.	370,000

[fol. 150] In addition to the above described property plaintiff by arrangement with other companies shares in the use of holders and stations having an aggregate capacity of 26,000,000 cubic feet owned and operated by said other companies.

Plaintiff owns and operates office buildings, warehouses, shops and garages as follows:

General office building	176 Remsen Street
Demonstration building	180 Remsen Street
Warehouse	130 Atlantic Avenue
Commercial office	322 Bedford Avenue
Commercial office	Atlantic Avenue and Ashford Street
Commercial office	419 Fifth Avenue
Commercial office	1024 Fulton Street
Laboratory	191 St. James Place
Fitters' school of instruction	197 St. James Place
Meter repair shop	12th Street and 2d Avenue
Garage and Storehouse	Atlantic Avenue and Ashford Street
Shop	5 Skillman Street
Repair shop	Plymouth and Gold Streets
Garage	Third Avenue and Degraw Street
Emergency station	Rutledge Street and Kent Avenue

Each of the properties described in this finding and the structures and equipment thereon are necessary to plaintiff and used and useful in the public service, and the defendants offered no evidence to the contrary.

46. Plaintiff rents the following parcels of real estate with improvements thereon for the respective purposes stated: Branch commercial offices at 630 Myrtle Avenue, 348 Court Street, 4723 Fourth Avenue, 2067 Fulton Street and 1383-89 Myrtle Avenue; land upon which the holder station is situated at Beaver and Church Streets, Jamaica, Borough of Queens; pipe storage yards at Van Sinderin and Dumont Avenues and at Flatbush Avenue and Avenue H; garages at 274-6 Butler Street and at Third Avenue and Third Street; storage yards at Kent Avenue and South [fol. 151] Ninth Street and at 632 Kent Avenue. Each of the above described properties is necessary to plaintiff and used and useful in the public service, and defendants offered no evidence to the contrary.

47. On June 1, 1923, plaintiff had in service 465,909 regular meters and 13,763 prepayment meters and in stock 7,649 regular meters and 424 prepayment meters.

On June 1, 1923, plaintiff had in service 147,687 services of various sizes.

On June 1, 1923, plaintiff had in service 1,017.75 miles of mains of various sizes from 1¼ inches to 42 inches in diameter.

On December 31, 1923, plaintiff had in service 475,325 regular meters and 13,426 prepayment meters and in stock 11,203 regular meters and 283 prepayment meters.

On December 31, 1923, plaintiff had in service 150,750 services of various sizes.

On December 31, 1923, plaintiff had in service 1,027.29 miles of mains of various sizes from 1¼ inches to 42 inches in diameter.

48. The fixed capital accounts of plaintiff as entered upon its books of account showed the following balances upon the respective dates.

	As of June 1, 1923	As of December 31, 1923
Fixed Capital December 31, 1908:		
Plant and Patents	14,709,218.65	14,752,164.32
Street Mains	8,036,542.71	8,036,422.96
Services	1,072,413.27	1,068,115.27
Real Estate	$4,112,238.52	$4,106,288.52
[fol. 152] Meters	1,955,489.50	1,905,672.34
Meter Cocks and Connections	388,820.00	388,820.00
Tools and Implements	74,513.35	72,838.35
Office Furniture and Fixtures	55,080.51	55,045.54
Franchises and Rights	3,050,000.00	3,050,000.00
Total Fixed Capital December 31, 1908	$33,454,316.54	$33,235,367.30
Fixed Capital, Sub. to January 1, 1909:		
Land Devoted to Gas Operations	$586,246.73	$746,987.26
Works and Station Structures	2,138,402.25	3,116,279.20
Holders	317,249.28	564,478.49
Furnaces, Boilers and Accessories	907,351.81	1,369,681.81
Steam Engines	284,102.32	327,882.01
Gas Engines	1,160.90	1,160.90
Miscellaneous Power Plant Equipment	26,912.50	51,055.47
Water Gas Sets and Accessories	1,606,306.45	2,534,461.12
Purification Apparatus	1,491,567.96	1,716,541.75
Accessory Equipment at Works	1,284,979.39	1,495,695.40
Miscellaneous Construction Expenditures	622,841.36	655,161.35
Engineering and Superintendence	123,550.15	123,550.15
Injuries During Construction	1,707.77	1,707.77
Taxes During Construction	5,503.35	5,503.35
Gas Meters	1,050,302.51	1,802,223.24
Gas Tools and Implements	68,791.23	98,694.63
General Equipment:		
General Office Equipment	202,739.78	228,038.61
General Shop Equipment—Meter Repair Shop	6,912.09	7,498.39
General Stable Equipment	222,675.81	272,121.52
Gas Laboratory Equipment	22,419.44	25,216.84
Total General Equipment	$454,747.12	$532,875.27
General Structures	$803,418.44	$948,146.27
Organization	5,250.00	5,250.00
Trunk Lines and Mains	2,175,088.02	2,332,836.61
Gas Services	1,028,187.75	1,109,326.43
Total Fixed Capital, Sub. to Jan. 1, 1909	$15,744,817	$19,659,530.48
Total Fixed Capital	$49,199,133.93	$52,894,897.78

[fol. 153] 49. Adding to the respective totals shown in Finding 47 the investment of plaintiff in Equity Gas Company gives a total of $49,767,200 as of June 1, 1923, and a total of $53,462,964 as of December 31, 1923.

From the above stated sums respectively there should be deducted the sum of $6,069,968 and of $6,721,375, being the portion of each devoted to the use of subsidiary companies, (Calculated from Pl'ff's Ex. 254 on basis of Deft's Ex. 46), leaving a balance of $43,697,232 as of June 1, 1923, and of $46,741,589 as of December 31, 1923.

The above sums contain no provision for working capital.

50. It is conceded that from the year 1895 to the year 1909 property of the value of $4,000,000 was withdrawn from service which should have been credited to the plant account.

51. At the time of opening the books of the plaintiff, the cost of meters was shown to be $1,020,919.88. That at that time plaintiff purchased 113,067 meters, which were set down at an average cost of $9.03 per meter.

52. The evidence shows that in the year 1895, the majority of the gas meters purchased from the vendor Companies were 3 light meters.

53. During the year 1895 and 1896 the purchase price or cost of 3 light meters was $4.30 to $4.80 per meter.

54. It appears that it was the practice of the plaintiff to withdraw the meters at the cost of such meters.

[fol. 154] 55. The evidence shows that it was the practice of plaintiff to withdraw 3 light meters purchased prior to 1895 at the sum of $4.16 to $4.72.

56. The evidence shows that it was the practice of plaintiff to withdraw 5 light meters purchased prior to 1895 at the sum of $5.09 to $6.08.

57. Since January 1, 1909, the books of account of plaintiff and all other gas companies in the City of New York have been required to be kept in accordance with the rules and regulations of the defendant Public Service Commission of the State of New York and its predecessor, Public Service Commission of the State of New York for the First

District, which commissions had jurisdiction over said companies pursuant to the provisions of the Public Service Commission Law and Public Service Commissions Law of the State of New York. The books, accounts and records of plaintiff have been kept in conformity with such rules and regulations so prescribed by authority of the State of New York, such books, accounts and records accurately set forth the transactions entered therein, and defendants offered no evidence at the trial to dispute such accuracy and correctness, except certain correspondence between the Public Service Commission and the plaintiff indicating a difference of opinion as to the treatment of certain reserve accounts.

58. On December 31, 1923, plaintiff had on hand $1,873,830.70 belonging to its consumers.

59. The Company has an account on its books entitled "Contingencies" with a balance amounting to $12,589,976.13 on December 31, 1923.

60. The account "Contingencies" was opened on Janu- [fol. 155] ary 1, 1917, and there was transferred to it, from the former account known as "Accrued Amortization of Capital," the amount of $10,138,046.78, and also the sum of $1,603,232.68 from the account known as "Depreciation and Contingencies."

61. The account "Contingencies" was opened pursuant to a resolution of the Board of Directors of August 9, 1917, which recites that the reserve account was to make provision for such contingencies or casualties as those caused by fire, flood, earthquake, insurrection or riot or any other hazards.

62. Since the creation of the account "Contingencies," no charges have been entered against said account nor has any of the money represented by such account been used for contingencies or casualties as those caused by fire, flood, earthquakes, insurrection or riot or any other hazards.

63. The account "Accrued Amortization of Capital" was opened on January 1, 1909, pursuant to a resolution of the Board of Directors passed on April 13, 1909, as follows:

"Resolved, that commencing from January 1, 1909, the officers be and they hereby are authorized and directed to charge, each month, as part of the operating expenses of this company, an amount equal to ten cents per one thousand cubic feet of gas sold each month, to cover deterioration, renewals, extraordinary wear and tear, obsolescence, inadequacy, replacements, extraordinary casualties, contingencies, and to cover also, if any of such moneys remain, minor extensions and additions. No charges against the said account or appropriation of the fund, so established, shall be made except by authority of the Directors."

[fol. 156] 64. A reserve account for depreciation and for contingencies was set up by the Company from July 1, 1906, pursuant to a resolution of the Board of Directors passed on September 19, 1907.

65. On December 31, 1916, the balance of $1,603,232.68 in the account "Depreciation and Contingencies" was transferred to the account designated as "Contingencies."

66. The evidence shows that in the year 1906 the officers of the Company presented to the then Commissioner of Gas and Electricity of the City of New York an Exhibit, in a hearing conducted before that Commission, entitled "Summary of Business, showing cost of the manufacture and distribution of gas for the year ending October 31, 1905." That one of the items of cost of operation, as shown by this Exhibit, is a sum to provide for a reasonable reserve to cover contingencies.

In Note 7, of the Exhibit, entitled "Reserve to Provide for Contingencies" appear the following words:

"Over and above actual cost as found, there should be provided, in case of regulated price of gas, a reasonable reserve to provide for contingencies liable to occur, as shown by experience:—For instance, variations in prices of materials required in manufacturing gas and in repairs and renewals; strikes, accidents, such as fire and explosion; liabilities on account of accidents; insufficient protection under the law, as evidenced by present pressure law which supports continuing fines of $1,000 each for violations of a

law which cannot be complied with; expenses of hearings and extraordinary litigation; electrolysis, which has not been covered in estimate of depreciation, by reason of in- [fol. 157] sufficiency of exact data, although the danger is known to be real. One item under this head, has already developed; namely increase in candle power as required by law, from 20 to 22 C. P., making necessary the increase at Works from 24 to 26 C. P., or 2 candles additional—at an additional cost for oil of 2.46 cents per M cubic feet."

67. The evidence shows that the amount of $10,138,046.78 was transferred from the account "Accrued Amortization of Capital" to the account "Contingencies" without the sanction or permission of the Public Service Commission of the State of New York.

68. The evidence shows that the Public Service Commission of the State of New York protested to the complainant because the complainant transferred the amount of $10,138,047.78 from the account "Accrued Amortization of Capital" to the account of "Contingencies."

69. Plaintiff submitted to defendants on April 21, 1924, a detailed inventory of items, units and quantities with brief descriptions of such property and a statement of the unit prices or costs applied to each such units to reach its allegation of cost to reproduce the property. Defendants upon the trial introduced no evidence whatever upon the existence, use or usefulness of any item or quantity shown in such inventory or any unit price applied therein.

70. In the month of October, 1922, the City of New York assessed the valuation of the improvements on the parcels of land outside of the works then belonging to the plaintiff for the purpose of taxation as follows:

[fol. 158]

General Office Bldg., 176 Remsen St.	$447,000 00
Demonstration Bldg., 180 Remsen St.	22,000 00
Warehouse, 130 Atlantic Ave.	7,400 00
Warehouse Garage, 1016 Fulton St.	14,000 00
Nassau Branch, 1024 Fulton St.	83,500 00
Metropolitan Branch, 5th Ave. and 8th Street.	24,500 00

Williamsburg Branch, 322 Bedford Ave.	40,500 00
Fitters' School, 197 St. James Pl.	8,650 00
Laboratory and Medical School, 191 St. James Pl.	12,650 00

71. Plaintiff on June 1, 1923, owned the following parcels of land:

	Location	Area, sq. ft.
1	Nassau Works.	176,554
2	Williamsburgh Works.	189,800
3	Williamsburgh Works.	40,000
4	Wythe Ave. Station	90,000
5	Rutledge St. Station	38,793
6	Keap St. Station	21,686
7	Union Station and Citizens Branch	54,795
8	Equity Works	85,316
9	Belmont Station ..	45,000
10	Skillman Stations.	33,750
11	Scholes St. Station.	40,000
12	Metropolitan Branch.	3,875
13	Nassau Branch and Shop	16,704
14	Laboratory and Fitters' School	5,000
15	Williamsburgh Branch	3,682
16	Fulton Works & Third Ave. Garage.	240,250
17	Third Ave. Station	39,700
18	Metropolitan Works, Meter Repair, Etc.	110,180
[fol. 159]	19 Metropolitan Works.	190,850
20	Citizens Works and 5th St. Station	422,246
21	5th St. Station.	44,942
22	176-180 Remsen St.	14,800
23	130 Atlantic Ave.	2,040
24	Plymouth St. Station.	51,620
25	Front St. Station	59,995

On that date the value of the land, unimproved, was $3,000,000. There is no evidence of any decrease in the value of any of the said parcels of land since June 1st, 1923.

On October 15, 1923, plaintiff purchased a parcel of land at Sixth Street and Gowanus Canal, Block 990, Lots 138-144 on the Tax Map of the Borough of Brooklyn, City

of New York, for the sum of $161,469, making the value of plaintiff's land unimproved on December 31, 1923, the sum of $3,161,469.

The above described parcels of land are necessary to the plaintiff and used and useful in the public service and defendants offered no evidence to the contrary.

72. The many buildings comprising the various manufacturing plants are of varying age, have been added to, altered, extended and otherwise changed.

73. Since 1895, some of the buildings purchased have been torn down, some altered, and some remain in their original condition.

[fol. 160] 74. During the last 20 years all the commercial holders built by the complainant have each had a capacity of 5,000,000 cubic feet.

75. The buildings, structures, gas manufacturing plants, stations, gas holders, trunk lines and mains, services, meters and general equipment owned and used by the plaintiff in its gas business have been and are maintained in a high state of repair and in excellent operating condition; proper repairs thereto and renewals and replacements thereof have been made as and when required; and no diminution or loss in productive capacity has been sustained.

76. From the cost to reproduce the buildings and structures there should be deducted $20,756, being the amount necessary to expend to put the same in a condition equal to new.

77. From the cost to reproduce the gas manufacturing plants and stations and gas holders there should be deducted $528,368.40, being the amount necessary to expend to put the same in a condition equal to new.

78. No proof was produced before me showing whether any factor of approaching obsolescence or inadequacy existed tending to lessen the worth of the buildings and plant equipment, except that it appeared in evidence what expenditure was required to restore the buildings to a

condition equal to new and this evidence was not contradicted.

79. No proof was produced before me showing whether any factor of depreciation, including wear and tear, obsolescence, inadequacy or other causes existed tending to lessen the worth of the various buildings and plant equip- [fol. 161] ment, except that it appeared in evidence what expenditure would be required to restore the same to a condition equal to new and this evidence was not contradicted.

80. The complainant carries a reserve account for accrued amortization of capital, the balance on December 31, 1922, being $931,258.93.

81. The books of the plaintiff show the cost of installing mains in the streets of Brooklyn in June, July and August, 1923, the following average prices per foot:

Size of main	Cost per foot
2″	$ 85
4″	1 48
6″	1 72
12″	2 31

82. The evidence shows that the actual price at which cast iron pipe for street mains could be purchased on June 1, 1923, depends to a great extent upon so many variable factors that it can not be accurately determined what amount would be paid unless an actual purchase was made as of that time.

83. The plaintiff purchased cast iron pipe in December, 1922, at the price of $56 per ton.

84. The plaintiff purchased cast iron pipe in December, 1923, at the price of $66.60 per ton.

85. The evidence shows that it will require 110,312 tons of cast iron pipe to reconstruct the system of mains of the plaintiff.

86. The evidence shows that it would require at least 2 years to reconstruct the system of mains.

87. On the cost of reproduction theory no allowance is made for the cost of restoring the pavement over mains [fol. 162] and services where such pavement was installed subsequent to the installation of the mains and services in question.

88. The estimated cost to restore pavements over mains and services is limited to such pavements as had been installed prior to the installation of mains and services in the instant case and otherwise disallowed.

89. The Brooklyn Gas Light Company, one of the vendor corporations, charged at least some its consumers a contribution toward the expense of installing service pipes.

90. The Williamsburg Gas Light Company, one of the vendor corporations, charged its consumers a contribution toward the expense of installing service pipes from the year 1852 to 1881.

91. The Metropolitan Gas Light Company, one of the vendor corporations, charged at least some of its consumers a contribution toward the expense of installing service pipes.

92. Such contributions as were received by the Brooklyn Union Gas Company from its consumers were for the average length of service pipe from the house line to the meter.

93. Such contributions as were received by the Brooklyn Union Gas Company from its consumers for installation of services during the period from 1912 to 1920 were as follows:

Size of service	Cost per foot
1¼″	$.15
1½″	.15
2″	.25
3″	.50

[fol. 163] 94. Such contributions as were received by the Brooklyn Union Gas Company from its consumers for installation of services during the period from March 20th, 1920, to date were as follows:

Size of service	Cost per foot
1¼"	$ 60
1½"	65
2"	80
3"	95

95. The Company credits its service account at the time of withdrawal of service pipe as follows:

Size of service	Cost per foot
¾"	$10 00
1"	10 00
1¼"	11 00
1½"	15 00
2"	20 00
2½"	32 00
3"	42 00
4"	62 00

96. The Company credits its service account at the time of withdrawal of service pipe with the cost of installation when known, and if unknown, at the cost of installation as estimated.

97. There was no evidence produced showing the number of feet of service pipes paid for by the consumers, nor the total contributions made by the consumers, nor the identity of the consumers who had made the contributions.

98. In the year 1922, the consumers contributed $21,697.02 for installation of services and in the year 1923 the consumers contributed $19,573.58 for installation of services.

[fol. 164] 99. The gas meters in use by the plaintiff are of varying age, the exact age of each not being proved.

100. During June, July and August, 1923, 4926 meters of various sizes were withdrawn from service.

101. During the period from June 1, 1923, to December 31, 1923, 11,037 meters of various sizes were withdrawn from service.

102. On June 1, 1923, there were 2,379 meters in the meter repair shop of complainant, that had been repaired and 3,579 meters to be repaired.

103. No proof was offered showing the cost or purchase price of used or second hand gas meters of the various sizes in use by plaintiff.

104. There was no evidence produced before me showing the cost of used automobiles or office furniture of the same character and condition such as in use by plaintiff on June 1, 1923.

105. Upon the theory of cost of reproduction of complainant's property, a reasonable allowance for overhead items is approximately 15% of the structural costs.

106. Upon the proof as presented before me there should be no allowance made in this case for "Franchise" value.

107. Working capital is the total floating or mobile capital required in addition to fixed capital either in the form of current assets or materials and supplies for the efficient and economical carrying on of the multitudinous transactions of daily operation. Money must be expended for articles not reflected in the fixed capital accounts as of any [fol. 165] particular date and an amount of money kept on hand to meet current expenses promptly. These elements of outlay and investment constitute working capital. No evidence upon this subject was introduced by the defendants. The average working capital of plaintiff during the year 1923 was actually $10,184,975.63. A fair and reasonable amount of working capital for plaintiff exclusive of such working capital as is required to manufacture and supply gas to the so-called subsidiary companies is the sum of $5,000,000.

108. The cost to reproduce the manufacturing plants, distribution system and other property owned by plaintiff, used and useful in the public service as of June 1, 1923, at the prices of labor and material then prevailing was and is, after deducting the portion thereof devoted to the use

of the so-called subsidiary companies, at least the sum of $62,851,910 made up as follows:

Land	$3,000,000 00
Buildings and structures after deducting the amount necessary to expend in order to put the same in a condition equal to new, namely, $20,756	7,000,000 00
Gas manufacturing plants and stations, including holders, after deducting the amount necessary to expend in order to put the same in a condition equal to new, namely, $528,368	14,500,000 00
Trunk lines and mains	18,000,000 00
Services	6,250,000 00
Meters	4,000,000 00
General equipment	600,000 00
[fol. 166] Allowance for cost of financing, together with the general items of overhead, under which I include omissions and contingencies, organization and development prior to construction, engineering and contractors' expenses and profit, interest during construction, taxes during construction, administrative, legal, miscellaneous and general expenses during construction	11,000,000 00
Total	$64,350,000 00
Deduct portion of above property devoted to the use of subsidiary companies	6,498,090 00
	$57,851,910 00
Add working capital	5,000,000 00
Total	$62,851,910 00

109. The present fair value of plaintiff's property inventoried and proved to be used and useful as of June 1, 1923, is $55,000,000, exclusive of the property devoted to the use of the so-called subsidary companies. The net cost of additions, improvements and extensions thereto used and useful in the public service and made between June 1, 1923,

and December 31, 1923, amounts to $3,856,971, of which $764,458 (calculated from Pl'ff's Ex. 310 on basis of Deft's Ex. 46), represents property devoted to the use of the so-called subsidiary companies. Plaintiff was and is entitled to earn a fair return upon the amount of $58,092,513, so found as the value of the plaintiff's property used and use-[fol. 167] ful in the public service on December 31, 1923, and defendants offered no evidence to the contrary.

110. Going concern value exists in the instant case. I fix that value at $6,000,000. I have not included this item in reproduction cost, nor in adopting a rate base, for the reason that even without such an allowance the statute is clearly confiscatory.

111. Demand for gas varies, depending upon atmospheric temperature and other factors. The minimum demand occurs during the summer when the use of gas for domestic purposes is greatly decreased. Conversely, the maximum occurs in the winter months. Plaintiff must be prepared to meet a maximum demand and each and every fluctuation and is required at all times to maintain a reserve capacity to meet a sudden increase in demand due to a change in temperature or other emergency. The maximum day's send out during the winter of 1923-24 was $94,944,000 cu. ft. on January 21, 1924, an increase over the send out of the preceding day of 43%, due to a drop in atmospheric temperature from 31° to 8° F. Increased use of gas for heating and for domestic purposes accentuates the maximum day's demand in relation to the annual output and makes necessary a plant capacity relatively larger than the average daily requirement. Plaintiff ought reasonably to have a reserve manufacturing plant capacity equal to 25% of its rated capacity.

112. On May 13, 1921, the District Court of the United States for the Southern District of New York, Hon. Julius M. Mayer, District Judge, presiding, made and entered a decree in an action entitled "The Brooklyn Union Gas Com-[fol. 168] pany, Complainant, against William A. Prendergast, William R. Pooley, Charles Van Voorhis, Oliver C. Semple and Charles G. Blakeslee, constituting the Public Service Commission of the State of New York; Charles D. Newton as Attorney General of the State of New York,

and Harry E. Lewis as District Attorney of Kings County." Said decree enjoined and restrained the public officers of the State of New York from enforcing the provisions of Chapter 125 of the Laws of 1906 or in any way attempting to enforce the same, the said act being adjudged confiscatory as to this plaintiff. Thereafter defendants Newton and Lewis duly appealed from said decree to the Supreme Court of the United States. The decree was in all respects affirmed and the mandate of the Supreme Court of the United States dated March 27, 1922, entered in the District Court of the United States for the Southern District of New York on April 10, 1922.

113. On or about May 20, 1921, the Public Service Commission of the State of New York upon its own motion, instituted a proceeding entitled "Matter of gas rates in the City of New York and suburban territory (Case No. 79)" for the purpose of investigating the rates charged by gas corporations in the City of New York, including plaintiff, their operating expenses, revenues, service, property and investment and thereafter on August 30, 1922, filed an opinion in this case setting forth its findings and conclusions and the reasons for the making and entry of orders prescribing a calorific standard for gas and rates to be charged by certain gas corporations, including plaintiff, and upon the same day made and entered an order, wherein the said Commission fixed the just and reasonable rates to be charged [fol. 169] consumers other than The City of New York on and after October 1, 1922, and until September 30, 1923, and thereafter until the Commission should otherwise order, and the classifications of the service to be furnished to such consumers as follows, reserving, however, the right to alter, modify or abrogate its said order.

1. First, 100,000 cubic feet of gas per meter per month, $1.15 per thousand cubic feet.

2. Next 200,000 cubic feet of gas per meter per month, $1.10 per thousand cubic feet.

3. Next 300,000 cubic feet of gas per meter per month, $1.05 per thousand cubic feet.

4. Next 400,000 cubic feet of gas per meter per month, $1.00 per thousand cubic feet.

5. All over 1,000,000 cubic feet of gas per meter per month, $0.95 per thousand cubic feet.

Inasmuch as practically all of the gas sold by plaintiff since the fixing of the above rates has been furnished to consumers using less than 100,000 cubic feet of gas per meter per month, the above scale of rates was adjusted by the Commission to yield plaintiff approximately $1.1482 per thousand cubic feet of gas sold and such graduated scale of rates has in fact yielded plaintiff a revenue approximating that amount. The Commission in its opinion further stated:

"Although the facts known to the Commission and confirmed by the analysis of exhibits in the conferences indicate that the rates now fixed by the Commission could hardly be deemed adequate if based only upon present conditions and present costs of manufacture, distribution, taxes, maintenance of property and return upon investment, the Commission feels confident that upon the greater sta- [fol. 170] bilization of prices and the realization of certain prospective reductions in expense, the rates hereby put in force will approach the requirements of adequacy."

Thereafter and on and about September 14th, 1922, plaintiff notified the Commission in writing that the terms and conditions of the order were accepted and would be obeyed in a notification of acceptance in writing as follows:

"The Brooklyn Union Gas Company hereby acknowledges receipt of a copy of an order certified by the Secretary of the Commission to have been adopted by the Commission on August 30, 1922, in the above-entitled proceeding, prescribing the rates to be charged for gas by said Company to all of its consumers, other than The City of New York, and the classification of such service.

"The Brooklyn Union Gas Company hereby notifies the Commission that the said order of August 30, 1922, and the terms and conditions thereof are accepted and will be obeyed.

"This acceptance and statement of readiness to obey the said order dated August 30, 1922, is not intended as a concession by The Brooklyn Union Gas Company that the rates therein prescribed are adequate or reasonable or that

such rates and classifications of service will yield a proper return upon the value of its property used and useful in its business.

"Such acceptance and statement of readiness to obey is not intended as a waiver of any right at any time in the future to claim a return upon the value of its property at the time or any other right which it may have with reference to rates past, present or future."

114. On or about May 20, 1921, in conjunction with the proceedings in the said Case No. 79, the Commission in- [fol. 171] stituted a proceeding, upon its own motion, entitled, "Matter of standards of purity, illuminating power and heating power of gas, and standards for the measurement thereof in the City of New York and suburban territory (Case No. 108)" and on August 30, 1922, made and entered an order in said Case No. 108, wherein it found that the standard of 22-candle power theretofore prescribed by statute was unreasonable, uneconomical and improper and that the continuance of such a standard would not be in the public interest and that a standard of quality and measurement based upon the heating power of gas, as in said order more particularly specified, should be fixed and directed that on and after October 1, 1922, each gas corporation supplying manufactured gas in the Boroughs of Manhattan, Brooklyn, The Bronx, Queens and Richmand, comprising the City of New York, and in the franchise territory of the Queens Borough Gas and Electric Company in the County of Nassau, should, in lieu of the existing standard or standards, furnish to its consumers a quality of gas which should comply with the requirements therein prescribed, including a requirement that under specified conditions such gas should have a total heating value on a monthly average of not less than five hundred thirty-seven (537) British thermal units per cubic foot and a daily average of not less than five hundred twenty-five (525) British thermal units per cubic foot on any three consecutive calendar days in any month, as is more fully set forth in the said order, and further directed that the order should take effect on the date specified and continue in effect until changed, modified or abrogated by the Commission. Thereafter a certified copy of the said order in Case No. 108 having been served upon plaintiff, plaintiff on or about

September 14, 1922, notified the Commission that the terms [fol. 172] and conditions of the said order in Case No. 108 were accepted and would be obeyed.

115. In compliance with said orders of the Public Service Commission dated August 30, 1922, plaintiff under the supervision of the defendant Public Service Commission made changes in the adjustment of the gas appliances of its consumers in order to make the use of gas of the standard prescribed in said orders safe and efficient. The maximum variation in the adjustment of appliances is within a range of about 50 British thermal units per cubic foot. Plaintiff as soon as possible after said orders became effective adjusted the appliances of its consumers to safely and efficiently burn gas of a heating value ranging from approximately 537-550 to 600 British thermal units per cubic foot. Plaintiff necessarily and reasonably expended for labor and materials in making such changes in the gas appliances of its consumers the sum of $108,668.23. The completion of such adjustment necessarily and reasonably extended over a period of seven months, during which it was necessary and proper for plaintiff to produce gas of not less than 600 British Thermal Units per cubic foot in order to provide safe and efficient service to the consumers whose appliances had not yet been adjusted, and plaintiff did so manufacture and supply *of* gas of such thermal content. Upon completion of [such adjustment] plaintiff began a gradual reduction in the thermal content of its gas from 600 British thermal units to a lower prescribed standard. On or about May 1, 1923, the thermal content was reduced to 590 British thermal units; on May 15, 1923, the thermal content was further reduced to 580 British thermal units, [fol. 173] which has been the average thermal content of the gas, tested at the works since May 15, 1923.

116. Said orders dated August 30, 1922, and the rates, classifications and standard fixed therein were in force and effect on June 2, 1923, when chapter 899 of the Laws of 1923 of the State of New York was approved by the Governor and plaintiff has duly filed with the Commission and posted and published as required by law and order tariff schedules setting forth the rates, charges and classifications to be in force for service to be furnished by plaintiff

in accordance with the aforesaid orders of the Commission and has complied in all respects with the terms, provisions and conditions of said orders.

117. Gas of a standard not less than 650 British thermal units cannot be furnished to the appliances of plaintiff's consumers as at present adjusted without danger or injury to person and property. Such appliances already adjusted to comply with the order of defendant Public Service Commission must be again adjusted before gas of the prescribed standard can be safely or efficiently burned therein.

118. Plaintiff owns all the stock of five so-called subsidiary companies, each of which distributes and sells gas to its consumers, to wit, The Newtown Gas Company, the territory of which is the 2d ward of the Borough of Queens; The Jamaica Gas Light Company, the territory of which is part of the 4th ward of the Borough of Queens; The Woodhaven Gas Light Company, the territory of which is part of the 4th ward of the Borough of Queens; Richmond Hill and Queens County Gas Light Company, the territory of which is part of the 4th ward of the Borough of Queens and [fol. 174] The Flatbush Gas Company, the territory of which is the 29th ward of the Borough of Brooklyn, which companies together with plaintiff constitute what is generally known as "The Brooklyn Union System."

119. Each of the so-called subsidiary companies purchases from plaintiff all gas distributed by it. The transmission and distribution mains and holder stations of The Brooklyn Union System are interconnected. The Newtown Gas Company and The Flatbush Gas Company each own and operate holders and holder station facilities which plaintiff rents and the cost of which plaintiff apportions to the remaining subsidiary companies participating in the use thereof. Local commercial organizations separate and apart from that of plaintiff are maintained by the so-called subsidiary companies, the general administrative organization for the system being maintained by plaintiff. Plaintiff pays all expenses of such general administrative organization and apportions the cost to each of the so-called subsidiary companies according to the ratio of the volume of sales of gas of each so-called subsidiary to the total volume of sales of The Brooklyn Union System.

120. Plaintiff charges the so-called subsidiary companies the cost to manufacture the gas purchased by each plus an amount designed to reimburse plaintiff for general administrative services and a return on and the carrying cost of the property of plaintiff devoted to the use of each so-called subsidiary company. Plaintiff charges the Newtown Gas Company and The Flatbush Gas Company 21 cents per thousand cubic feet of gas purchased by each such company, and Richmond Hill and Queens County Gas Light [fol. 175] Company, The Jamaica Gas Light Company and The Woodhaven Gas Light Company, 26 cents per thousand cubic feet of gas so purchased. The differential represents payment for the use of holder and station facilities. The quantity of gas purchased by each so-called subsidiary company is determined by adding to the quantity of gas sold, as measured by the meters of the consumers of each such so-called subsidiary, and the gas used by each such so-called subsidiary, also measured by meters, a quantity representing so-called unaccounted for gas. The above described arrangement results in a fair, reasonable and equitable apportionment of the cost of general administrative organization expenses and the use and operation of jointly used facilities.

121. The evidence shows that the general books of the subsidiary companies are kept by The Brooklyn Union Gas Co., and that the general officers, general office clerks, the distribution superintendent and employees under him, the accounting department, the purchasing department, the new business department and a great many other departments perform work for the subsidiary companies as well as for The Brooklyn Union Gas Company.

122. An allocation of various expenses is made early in the year based upon estimated sales of gas by the subsidiaries and the plaintiff and estimated expenses for the year covering the various items of operating cost.

123. An allocation of the various expenses between the subsidiary companies and the plaintiff, by using the same theory of allocation and the same items of expense but using [fol. 176] actual sales of gas, instead of estimated sales and using actual expenditures for the various items, instead of estimated expenditures, results in a charge to the subsidiary companies for the year 1923 of $44,503.93 greater than the amount actually paid by said subsidiary companies.

124. Theoretically, there should be charged to the subsidiary companies during the year 1923 the sum of $3,236.32 as the cost of gas used in making gas for such subsidiary companies, but the same is deemed to be covered into an allocation of various expenses made early in each year, based upon estimated sales of gas by the subsidiaries and the plaintiff and estimated expenses for the year covering the various items of operating cost.

125. The evidence shows that the automobiles of the plaintiff are used by the various general officers of the Company, who perform work for the subsidiary companies—that gas meters are carted to the repair shop of the plaintiff and are also carted to the territories of the subsidiary companies—that gas appliances and stores are carted to the warehouse at 1024 Fulton Street, and from there to the territories of the various subsidiary companies—and that no expense of the operation of such automobiles or the upkeep of such cars is borne by the subsidiary companies, nor is such expense specifically allocated between the plaintiff and the subsidiary companies.

126. During the year 1924, the accounts of the plaintiff relative to the use of the various automobiles is kept in greater detail than during the year 1923.

127. An examination of the records of the plaintiff for the first five months of 1924, shows that 29.176% of the [fol. 177] total transportation or automobile expenses were incurred for other than operating expenses, and that 70.824% of such expenses were incurred for operating expenses of the plaintiff, and that of such operating expenses 7.978% could be applied to the subsidiary companies during the first five months of 1924.

128. A reasonable allocation of automobile and stable expense between the plaintiff and the subsidiary companies can be made by applying the same ratios as shown by the more detailed accounts kept during the first five months of 1924.

129. A reasonable allocation of automobile and stable accounts for the year 1923 shows that 29.176% could be charged to fixed capital and non-operating accounts, in the sum of $62,563.58, and that 7.978% could be deemed ap-

plicable to the subsidiary companies, or the sum of $17,-104.41, but the same is deemed to be covered into the allocation of various expenses made early in each year, based upon estimated sales of gas by the subsidiaries and the plaintiff and estimated expenses for the year covering the various items of operating cost.

130. The evidence shows that the gas appliances for The Brooklyn Union Company, as well as the subsidiaries, are purchased by the general purchasing agent upon the recommendation of Mr. Wiske, the head of the new business department, and that such appliances are stored at 1024 Fulton Street and delivered, as needed, to the subsidiary companies.

131. The evidence shows that during the year 1923 the gross profit on appliances sold by The Brooklyn Union Gas [fol. 178] Company was $272,081.19 and the expenses due to obtaining the business was $269,683.13.

132. The evidence shows that during the year 1923 the gross profit on appliances sold by the subsidiary companies was $72,992.39 and the expenses due to obtaining the business was $26,498.36.

133. The evidence shows that the selling price of appliances is the same with the plaintiff and the subsidiaries.

134. The evidence shows that the fair rental of the building occupied by the New Business Department and the cost of lighting and heating the building is not considered as a promotion expense.

135. The proof shows that when the fair rental of the building occupied by the New Business Department and the cost of lighting and heating the same is considered as an expense, the sale of gas appliances is conducted at a loss.

136. The evidence shows that the total gas merchandise and jobbing revenue during the year 1923 for the system was $404,855.47 and the total promotion expenses was $296,-181.49.

137. An equitable amount of expense chargeable to the subsidiary companies would be $89,401.62, and for the plaintiff $206,719.87, were not these items deemed to be covered

into an allocation of various expenses made early in each year, based upon estimated sales of gas by the subsidiaries and the plaintiff and estimated expenses for the year covering the various items of operating cost.

138. Based on an equitable allocation of expenses be- [fol. 179] tween the subsidiaries and the plaintiff, it appears that the new business department made a net profit of $75,848.34 during the year 1923, and exclusive of any fair charge for the rental of the building occupied by said new business department or the cost of lighting and heating said building, subject to such alteration as would thereby be effected in the allocation of various expenses deemed to include those in question made early in each year based upon estimated sales of gas by the subsidiaries of the plaintiff and estimated expenses for the year covering the various items of operating cost.

139. It is not possible in the absence of an established rule for the conditions of temperature and atmospheric pressure under which the thermal content of gas is to be measured to determine the quantity of oil necessary to produce gas of a standard not less than 650 British thermal units or of any other standard. According to habit, rule and usage established by custom in the United States of America gas is measured under conditions of 60 degrees F. temperature and 30 inches barometric pressure.

140. In order to furnish gas of a standard not less than 650 British thermal units per cubic foot, there must be contained in the gas when measured at the plaintiffs' works under conditions of 60 degrees F. temperature and 30 inches of barometric pressure not less than 670 British thermal units.

141. In order to furnish gas of a standard of not less than 650 British thermal units per cubic foot measured under conditions of 60 degrees F. atmospheric temperature and 30 inches of barometric pressure, there will be required not less than 4.5 gallons of gas oil and 32.5 pounds of generator fuel per thousand cubic feet of gas made.

[fol. 180] 142. Changes of temperature and atmospheric pressure occur in the territory served by plaintiff throughout the year.

143. Gas expands when heated and contracts when cooled, the expansion being one per cent in volume for each 4 degrees change in temperature. Gas also expands or contracts due to barometric pressure, and as the pressure increases or decreases the volume of the gas decreases or increases. Gas having a thermal content of 650 British thermal units per cubic foot measured at 60 degrees F., would at 80 degrees F. contain 618 British thermal units per cubic foot, and a change of 1 inch in barometric pressure would reduce gas containing 650 British thermal units per cubic foot to an approximate content of 628 British thermal units per cubic foot.

144. After negotiations with several companies, plaintiff on May 25, 1921, entered into a contract with Standard Oil Company of New York for the supply of 85,000,000 gallons of gas oil at 5½¢ per gallon. After similar negotiations plaintiff on May 1, 1922, entered into a contract with the same company for the supply of 95,000,000 gallons of gas oil at 5¾¢ per gallon and on January 26, 1923, after similar negotiations a contract was entered into with the same company for the supply of 25,000,000 gallons of gas oil at 5½¢ per gallon. The gas oil used by plaintiff in the manufacture of gas during the years 1922 and 1923 supplied under the above mentioned contracts was at an average cost during the year 1922 of 5.6¢ per gallon of oil used and during the year 1923 at an average cost of 5.67¢ per gallon of oil used. After negotiations with several companies plaintiff on October 25, 1923, entered into a contract with Standard Oil Company of New York for the supply of 105,000,000 [fol. 181] gallons of gas oil at 4.8¢ per gallon, deliveries under which contract began in February, 1924. These prices are reasonable and the best obtainable by plaintiff and defendants offered no evidence to the contrary.

145. During the year 1922 the average cost of generator coal was $10.92 per gross ton in the storage bin and during the year 1923 was $11 per gross ton so delivered. The average cost of boiler coal during the year 1922 was $8.75 per gross ton in the storage bin and during the year 1923 was $8.99 per gross ton so delivered. The average cost of generator coke during the year 1922 was $9.76 per gross

ton in the storage bin and during the year 1923 was $10.25 per gross ton so delivered. The average cost of boiler coke during the year 1922 was $9.83 per gross ton in the storage bin and during the year 1923 was $10.32 per gross ton so delivered.

These costs for generator and boiler fuel include all expense incidental to delivery in the storage bins.

To provide for its fuel requirements plaintiff annually solicits bids from a number of dealers for the coal year from April 1 to March 31. There was delivered during the respective periods to plaintiff under contracts and agreements coal and coke as follows:

	Year April 1, 1921, March 31, 1922		Year April 1, 1922, March 31, 1923		Period April 1, 1923, January 31, 1924	
	Gross tons	Average price	Gross tons	Average price	Gross tons	Average price
Broken Coal...	339,032	$10.67	143,437	$10.61	282,424	$10.75
Buckwheat Coal	6,602	4.52	4,094	4.51	7,600	4.07
Bituminous Coal	9,765	7.06	4,156	6.04	4,672	6.26
Coke	13,750	8.84	127,706	9.68	101,805	10.13

[fol. 182] The above are invoice prices and do not include expenses as described above. The prices stated in this finding are reasonable and the best obtainable by plaintiff, and defendants offered no evidence to the contrary.

146. Plaintiff maintains a commercial department with branch offices throughout its territory. This department receives and executes applications for the supply of gas, keeps customers' accounts, reads meters, issues and delivers bills, makes collections for gas sold, receives complaints which are subsequently investigated and brought to the attention of the appropriate department, and generally is the department in direct communication with its consumers.

147. Plaintiff maintains a new business department such as is maintained and operated by other companies in and around the City of New York. The function of this department is to attach consumers and promote the sale of gas through the introduction of appliances. It permits the company to put at the service of its consumers a high grade of appliance. At the time of the organization of plaintiff and commencement of business all gas was used

for lighting and almost none for any other purpose. The use of gas for lighting has almost disappeared and its present use for cooking, heating and industrial purposes has been completely developed by the new business departments of the various gas companies including that of this plaintiff. By virtue of its activities plaintiff and other companies not only gain consumers but increase consumption per meter and thereby lower the cost of gas per thousand cubic feet.

[fol. 183] A gas company in order to render efficient service should in some measure control the type of appliance installed by its consumers. Such being the purpose and function of a new business department, it becomes immaterial whether it is operated at a departmental profit or a loss. The Uniform System of Accounts prescribed by the Public Service Commission of the State of New York provides that the revenues and expenses of this department be included in the operating accounts. In the operation of this deparment there are necessarily employed demonstrators, salesmen, canvassers and solicitors. The evidence in this case shows that defendant, Public Service Commission, has ordered plaintiff to install, if requested by a consumer, mantle burners to replace open flame burners, such mantle burners to be so furnished, and if requested so installed at cost for a period of eight months from October 1st, 1922.

148. There should be allowed as an item of operating expense such sum as is necessary to provide a reserve against which may be charged the original cost, actual or estimated, of property retired from service and cost of dismantling with credit for salvage; such reserve should be sufficient to cover retirement losses and be allowed in addition to necessary cost of keeping the property in a high state of efficiency through charges to the maintenance accounts. One and one-half cents per thousand cubic feet is a reasonable and proper allowance for that purpose.

149. The gas delivered by the plaintiff to the subsidiary Companies is not measured as it enters the territory of the subsidiary companies, but only at the consumers' meters.

[fol. 184] 150. It is impossible to ascertain the amount of gas lost in territory of the subsidiaries.

151. The amount of gas unaccounted for varies from year to year and is dependent upon the weather, consumption per mile of main, condensation, and many other facts.

152. The gas supplied by the subsidiary companies is made at the works of the plaintiff and is pumped to the territory of the subsidiary companies.

153. A percentage of loss of gas occurs in the territory of The Brooklyn Union Gas Company due to the fact that it is necessary to pump gas long distances to supply the territory of the subsidiary companies.

154. In the manufacture and distribution of gas a percentage of the gas made is necessarily lost due to a variation in temperature and a difference in pressure in handling and also to leakage and condensation. In the year 1922 such unaccounted for gas of the Brooklyn Union System was eleven per cent. and during the year 1923 was 10.57 per cent. For the years from 1910 to 1923, inclusive, the average unaccounted for was 9.34 per cent. The percentage for unaccounted for gas has increased generally during the last eight years. Defendants offered no evidence to dispute the reasonableness of the amount of unaccounted for which is found to have been reasonable.

155. In the manufacture of carbureted water gas a variety of materials is used, of which the more important are: gas oil, coal, coke, water, shavings, oxide and tar, which is a product of the manufacturing process subsequently utilized as boiler fuel. Plaintiff recovers drip oil [fol. 185] from its mains and holders, which is sold and credited to the cost of material used in manufacture. There is also necessary in the manufacture of carbureted water gas the employment of gas making labor and repair labor, the use of repair material and the incurring of miscellaneous works expenses and storage. There is no evidence in this record showing or tending to show that the prices of material or the wages paid for labor on the whole will be reduced from the wages and prices now being paid by the plaintiff. Credit is made to the total cost of all gas produced by plaintiff for the gas made and sold to the so-called subsidiary companies, and the books of plaintiff show the net cost of gas made by plaintiff for its direct consumers.

156. In the transmission and distribution of gas material and labor are necessary for operation, maintenance and repair.

157. The evidence shows that during the period from July 1st, 1914, to December 31st, 1923, the company had set up a reserve account entitled "Casualty and Insurance Reserve," against which is charged expenditures for personal injuries, property damage to others, claim department expenses, etc.

158. On December 31, 1923, the balance in said reserve account was $413,192.61.

159. The records of the plaintiff show that the charges against said reserve account for the period from July 1, 1914, to December 31, 1923, was the sum of $536,807.39 or an average annual expenditure of $56,506.04.

160. There was no evidence produced before me showing what it would cost to adjust the appliances of the con-
[fol. 186] sumers to enable them to burn gas of a content specified by the statute, but it did appear that such cost would exceed that incurred by the plaintiff in making the adjustments of 1922 and 1923.

161. The expenditure made to adjust the appliances in 1922 and 1923 was an unusual expenditure and an abnormal operating expense of the plaintiff. No allowance of this item is made by me in the instant case for the purpose of testing the alleged confiscatory feature of the statute.

162. The Company expended during the year 1923 the sum of $94,524.89 in the prosecution of the present litigation. This item is not allowed by me in the instant case for the purpose of testing the alleged confiscatory feature of the statute.

163. The proof shows that an item for uncollectible gas bills amounting to $63,916.50 in the year 1922, and $54,-849.00 in the year 1923 is included as an expense of operating during those years.

164. The cost of repairs at works and holder stations, during the past six years, is as follows:

1918	$309,400 92
1919	375,314 50
1920	656,207 63
1921	737,624 14
1922	623,215 16
1923	850,398 00

165. The cost of distribution repairs and transmission repairs during the past six years is as follows:

1918	$383,642 47
1919	352,799 67
1920	440,733 13
[fol. 187] 1921	523,829 00
1922	504,622 94
1923	548,134 67

166. The cost to produce gas at the various plants of complainant in the year 1923 was as follows, per thousand cubic feet made:

Metropolitan	44 59¢
Fulton	46 18
Williamsburg	47 09
Nassau	47 83
Citizens	53 01
Equity	58 43

167. The cost to produce gas was less at the Metropolitan works of the plaintiff than at the other works operated by the plaintiff.

168. The cost of production of gas is less at the Metropolitan works of the plaintiff because the plant was rebuilt to be more compact and the gas-making machines are all of the same type and practically of the same size, and the plant is a more recent remodeled plant.

169. During the year 1923, the operating conditions at the Citizens work were not the best, for the laboring men were considerably hampered by construction work going on there in that year.

170. The Company in the last few years has installed 6 waste heat boilers, 2 boilers with Coxe stokers, automatic or hydraulic controls on the generators, and a charging machine for two plants—the Metropolitan and the Nassau works.

171. During the year 1924, the cost of production at the Citizens works will be lessened by the operation of recent installation of improved plant equipment.

[fol. 188] 172. The reasonable and necessary cost to plaintiff for the items of gas making, labor and material was for the year 1922 as follows:

Operating Expenses

Production expenses:

Material:		Quantity	Average price	Amount	Cost per M based on make
Generator fuel—coal	Tons	192,200 64	$10 9199	$2,098,814 48	1055
Generator fuel—coke	Tons	96,555 60	9 7583	942,221 53	0474
Boiler fuel—coal	Tons	40,642 80	8 7543	355,799 89	0179
Boiler fuel—coke	Tons	8,222 51	9 8423	80,928 56	0041
Net amount for coal	Tons	232,843 44	10 5419	2,454,614 37	1234
Net amount for coke	Tons	104,778 11	9 7649	1,023,150 09	0515
Gas oil	Gals.	81,283,747	0560	4,549,101 39	2288
Shavings	Bales	2,128	5510	1,172 61	0001
Oxide	Bu.	318,128	2434	77,429 73	0039
Water	Cu. ft.	41,559,946	10 per C	41,559 95	0021
Misc. works expense				103,614 78	0052
Gas Storage				25,739 39	0013
Boiler fuel—tar	Gals.	12,384,251	02	247,685 02	0124
Total materials				8,524,067 33	4287
Less: Tar produced	Gals.	13,047,121	0210	274,541 48	0138
Drip oil sold	Gals.	370,664	0574	21,262 89	0011
Total				295,804 37	0149
Total net materials				8,228,262 96	4138

Labor:

Works superintendence	212,952 17	0107
Boiler house	193,329 66	0097
Generator house	523,313 76	0263
Purifier house	35,653 64	0018
Misc. labor at works	250,401 83	0126
Gas storage	177,534 58	0089
Total labor	1,393,175 64	0700
Total materials and labor	9,621,438 60	4838

Repairs:

Works and station structures	144,933 57	0073
Furnaces, boilers and accessories	89,146 81	0045
Steam engines	20,270 77	0011
Misc. power plant equipment	9,429 08	0005
Water gas sets and accessories	206,229 34	0104
Purification apparatus	24,297 70	0012
Holders	48,071 65	0024
Miscellaneous equipment	69,268 53	0035

Operating Expenses—Continued

[fol. 189]

Material:	Quantity	Average price	Amount	Cost per M based on make
Works tools			11,567 71	0005
Total repairs			623,215 16	0314
Total			10,241,653 76	5152
Less production adjustments			107,013 63	0054
Total production expenses			10,137,640 13	5098
Deduct Gas Made for associated Companies at Works Cost (4,100,998,991 Cu. Ft.).			2,090,689 29	5098
Net production cost based on quantity produced to provide for requirements of plaintiff			8,046,950 84	5098
Net production cost based on 13,859,896,959 cu. ft. sold.			8,046,950 84	5806

173. The reasonable and necessary transmisison and distribution expenses of plaintiff for the year 1922 were as follows:

Transmission and distribution expenses:

	Amount	Cost per M cu. ft. sold
Transmission pumping	$183,109 85	$0 0132
Distribution superintendence.	343,530 28	0248
Distribution supplies and expenses	35,807 60	0026
Gas meter and installation work.	280,081 47	0202
Gas meter installation	22,538 24	0016
Work on consumers' premises.	101,384 52	0073
Total	$966,451 96	$0 0697
Repairs of gas mains	$101,026 00	$0 0073
Repairs of gas services	75,765 41	0055
Repairs of gas meters	315,521 94	0227
Repairs of distribution tools	12,309 59	0009
Total	$504,622 94	$0 0364
Total transmission and distribution expenses	$1,471,074 90	$0 1061
Municipal street lighting expenses: Street lamp repairs	4,750 51	0003

[fol. 190] 174. The reasonable and necessary cost to plaintiff for the items of labor and material in the commercial and new business departments for the year 1922 are as follows:

Commercial administration—gas:

Commercial department:	Amount	Cost per M cu. ft. sold
General labor	$209,232 84	$0 0151
Accounting	287,023 28	0207
Contracts	51,493 01	0037
Collecting	216,886 93	0157
Meter reading	108,952 18	0079
Commercial office supplies and expenses	87,605 43	0063
Total	$961,193 67	$0 0694

Promotion office expense—gas:

Promotion management	$62,084 63	$0 0045
Demonstrations	58,363 89	0042
Other promotion office expenses	14,738 94	0010
Total	$135,187 46	$0 0097

Advertising—gas:

Advertising sundries	$5,103 21	$0 0004
Canvassing and soliciting—gas	33,181 25	0024
Total commercial expenses	$1,134,665 59	$0 0819

175. The reasonable and necessary cost to plaintiff of those items of labor and material known as general and miscellaneous expenses for the year 1922 are as follows:

General and miscellaneous expenses:	Amount	Cost per M cu. ft. sold
Salaries and expenses of general officers	$110,641 12	$0 0080
Salaries and expenses of general office clerks	181,529 44	0131
General office supplies and expenses	9,597 51	0007
General office supplies and expenses, G. O. Bldg.	41,781 66	0030
[fol. 191] General law expenses	60,837 35	0044
Miscellaneous general expenses	348,354 20	0251
Insurance	125,486 73	0090
Insurance—workmen's compensation, etc	100,000 00	0072
Relief department and pensions	28,915 00	0021
General stationery and printing	25,316 51	0018
Store expenses	82,849 10	0060
Stable expenses	46,479 74	0034
Stable expenses—automobiles	121,197 65	0087
Undistributed adjustments—Cr.	19,752 65	0014
Cost of manufacturing residuals sold	41,579 01	0030
Other rent deductions	12,262 06	0009
Rent expense	226 82	
Joint operating expenses—Dr.	56,000 00	0040
Joint operating expenses—Cr.	457,591 43	0330
Repairs of general structures	31,303 21	0023
Rent for lease of other gas plant	92,800 00	0067
Joint facility rents	58,000 00	0042
Total general and miscellaneous expenses	$1,097,813 03	$0 0792
General amortization	$207,898 44	$0 0150
Uncollectible gas bills	63,916 50	0046

176. Taxes assignable to the gas operations of plaintiff for the year 1922 are as follows:

	Amount	Cost per M cu. ft. sold
Real estate	$420,020.69	$0.0303
Real estate of corporations	414.00	.....
Special franchise	307,862.58	.0222
Personal property	4,110.00	.0003
Gross earnings	105,001.99	.0076
Federal capital stock	36,390.50	.0027
Federal income	294,000.00	.0212
Total	$1,167,799.76	$0.0843

177. The reasonable and necessary cost to plaintiff for the items of gas making, labor and materials for the year 1923 are as follows:

[fol. 192]

Operating Expenses

Production expenses:

Material:		Quantity	Average price	Amount	Cost per M based on make
Generator fuel—coal	Tons	212,413.13	$11.0035	$2,337,287.09	.1063
Generator fuel—coke	Tons	110,330.26	10.2540	1,131,324.41	.0515
Boiler fuel—coal	Tons	44,841.15	8.9949	403,341.22	.0184
Boiler fuel—coke	Tons	11,491.52	10.3174	118,562.38	.0054
Net amount for coal	Tons	257,254.28	10.6534	2,740,628.31	.1247
Net amount for coke	Tons	121,821.78	10.2600	1,249,886.79	.0569
Gas oil	Gals.	77,396,899	.0567	4,390,620.20	.1997
Shavings	Bales	2,575	.4313	1,110.66	.....
Oxide	Bu.	232,690	.2527	58,803.07	.0027
Water	Cu. ft.	49,643,914	10 per C	49,643 92	.0022
Misc. works expense		.....	.....	112,307.44	.0051
Gas storage		.....	.....	30,769.16	.0014
Boiler fuel—tar	Gals.	14,627,679	.02	292,553.58	.0133
Total materials		.....	.....	8,926,323 13	4060
Less: Tar produced	Gals.	13,914,704	.0205	284,878.50	.0130
Drip oil sold	Gals.	692,154	.0739	51,162.47	.0023
Total		.....	.....	336,040.97	.0153
Total net materials		.....	.....	8,590,282.16	.3907

Operating Expenses—Continued

Labor:	Quantity	Average price	Amount	Cost per M based on make
Works superintendence			224,977.12	.0102
Boiler house			204,716.88	.0093
Generator house			550,697.28	.0250
Purifier house			34,713.33	.0016
Misc. labor at works			289,659.37	.0132
Gas storage			181,491.63	.0083
Total labor			1,486,255.61	.0676
Total net materials			10,076,537.77	.4583
Repairs:				
Works and station structures			182,656.11	.0083
Furnaces, boilers and accessories			105,456.54	.0047
Steam Engines			26,876.45	.0012
Misc. power plant equipment			14,418.09	.0006
Water gas sets and accessories			313,560.61	.0142
Purification apparatus			33,748.24	.0016
Holders			79,439.45	.0037
Miscellaneous equipment			79,518.96	.0037
Works tools			14,723.55	.0007
Total repairs			850,398.00	.0387

Total	10,926,935.77	.4970
Less production adjustments	147,524.78	.0067
Total production expenses	10,779,410.99	.4903
Deduct Gas Made for Associated Companies at Works Cost (4,942,894,282 cu. ft	2,425,146.84	.4903
Net production cost based on quantity produced to provide for requirements of plaintiff	8,354,264.15	.4903
Net production cost based on 15,300,373,560 cu. ft. sold	8,354,264.15	.5460

[fol. 193] 178. The reasonable and necessary transmission and distribution expenses of plaintiff for the year 1923 were as follows:

Transmission and distribution expenses:	Amount	Cost per M cu. ft. sold
Transmission pumping	$152,860.79	$0.0100
Distribution superintendence	423,532.20	.0277
Distribution supplies and expenses	51,182.25	.0033
Gas meter and installation work	310,565.48	.0203
Gas meter installation	62,955.21	.0041
Work on consumers' premises	174,520.15	.0114
Total	$1,175,616.08	$0.0768
Repairs of gas mains	$116,500.33	$0.0076
Repairs of gas services	80,485.23	.0053
Repairs of gas meters	334,516.29	.0219
Repairs of distribution tools	16,632.82	.0011
Total	$548,134.67	$0.0359
Total transmission and distribution expenses	$1,723,750.75	$0.1127
Municipal street lighting expenses: Street lamp repairs	4,196.78	.0003

179. The reasonable and necessary cost to plaintiff for the items of labor and material in the commercial and new business departments for the year 1923 are as follows:

Commercial administration—gas: Commercial department—	Amount	Cost per M cu. ft. sold
General labor	$271,080 12	$0 0177
Contracts	54,925.67	.0036
Collecting	233,189.34	.0152
Meter reading	109,296.74	.0071
Commercial office supplies and expenses	92,645.49	.0061
Total	$1,041,909.43	$0.0681
General labor	$271,080.12	$0.0177

[fol. 194] Promotion office expense—gas:	Amount	Cost per M cu. ft. sold
Promotion management	$84,810 79	$0 0055
Commercial administration—gas:		
Demonstrations	91,598 99	.0060
Other promotion office expenses	19,349 84	.0013
Total	$195,759 62	$0 0128
Advertising—gas:		
Advertising sundries	$24,489 37	$0 0016
Canvassing and solociting—gas	49,434 14	.0032
Total commercial expenses	31,311,592 56	$0 0857

180. The reasonable and necessary cost to plaintiff of those items of labor and material known as general and miscellaneous expenses for the year 1923 are as follows:

General and miscellaneous expenses:		
Salaries and expenses of general officers	$127,692 15	$0 0083
Salaries and expenses of general office clerks	216,898 25	.0142
General office supplies and expenses	11,817 66	.0008
General office supplies and expenses, G. O. Bldg.	46,628 29	.0030
General law expenses	41,621 52	.0027
Miscellaneous general expenses	465,219 59	.0304
Insurance	136,126 87	.0089
Insurance—workmen's compensation, etc.	100,000 00	.0065
Relief department and pensions	28,840 00	.0019
General stationery and printing	21,483 65	.0014
Store expenses	126,453 30	.0083

	Amount	Cost per M cu. ft. sold
Stable expenses	10,173 14	.0007
Stable expenses—automobiles	204,221 66	.0133
Undistributed adjustments	4,596 87	.0003
[fol. 195] Cost of manufacturing residuals sold	60,925 17	.0040
Other rent deductions	29,117 80	.0019
Rent expenses	588 49	.....
Joint operating expenses—Dr.	56,000 00	.0037
Joint operating expenses—Cr.	541,679 25	.0354
Repairs of general structures	49,913 41	.0032
Rent for lease of other gas plant	92,800 00	.0061
Joint facility rents	58,000 00	.0038
Total general and miscellaneous expenses	$1,347,438 57	$0 0880
General amortization	$229,595 61	$0 0150
Uncollectible gas bills	54,849 00	.0036

Except that in this calculation there have been improperly included two items, one the expenses of the present litigation $94,524.89, and the other the cost of adjusting the appliances on consumers' premises to conform to the order of the Public Service Commission dated August 30, 1922, $108,668. Deducting these items makes the total general miscellaneous expenses $1,144,245.51, and the cost per thousand cubic feet sold $0.0749.

181. Taxes assignable to the gas operations of plaintiff for the year 1923 are as follows:

Real estate	$454,908 89	$0 0297
Real estate of corporations	411 00	.....
Special franchise	332,416 85	.0217
Personal property	4,095 00	.0003
Gross earnings	105,654 33	.0068
Federal capital stock	39,486 00	.0026
Federal income	385,141 49	.0252
Total	$1,322,113 56	$0 0863

182. During the year 1922 plaintiff sold to its private consumers 13,752,861,109 cubic feet of gas and to The City of [fol. 196] New York 107,035,850 cubic feet of gas. Plaintiff also sold certain of its residuals and by-products and received revenue from gas merchandise and jobbing. The operating revenues of plaintiff for the year 1922 were as follows:

Sales of Gas:	Amount	Per M cu. ft. based on sales
Municipal	$80,576 96	.7500
Private consumers	16,885,696 19	1.2278
Total from sale of gas	$16,966,273 15	1.2241
Miscellaneous Revenues:		
Gas Mdse. and jobbing revenue	193,486 49	.0140
Sale of residuals and by-products	41,579 01	.0030
Total Revenues	$17,201,338 65	1.2411

183. During the year 1923 plaintiff sold to its private consumers 15,192,487,402 cubic feet of gas and to The City of New York 107,886,158 cubic feet of gas. Plaintiff also sold certain of its residuals and by-products and received revenue from gas merchandise and jobbing. The operating revenues of plaintiff for the year 1923 were as follows:

Sales of Gas:	Amount	Per M cu. ft. based on sales
Municipal	$80,614 64	.7500
Private consumers	17,426,606 81	1.1470
	$17,507,221 45	1.1442
Miscellaneous Revenues:		
Gas Mdse. and jobbing revenue	282,568 21	.0184
Sales of residuals and by-products	60,925 17	.0040
	$17,850,714 83	1.1666

[fol. 197] In the above tabulation there is included in the revenue from private consumers the amount in excess of the rate fixed by Chapter 899 of the Laws of 1923 charged by plaintiff under the interlocutory injunction granted by this court July 2, 1923.

184. The operating revenues and expenses of plaintiff for the year 1922 summarized are as follows:

Revenues

Sales of Gas:	Amount	Per M cu. ft. based on sales
Municipal	$80,576 96	.7500
Private consumers	16,885,696 19	1 2278
Total sales	$16,966,273 15	1 2241
Miscellaneous Operating Revenues:		
Gas merchandise and jobbing revenue	193,486 49	.0140
Sales of residuals and by-products	41,579 01	.0030
	$235,065 50	.0170
Total Revenues	$17,201,338 65	1 2411

Expenses

Operating Expenses:		
Production expenses	$8,046,950 84	.5806
Transmission and distribution expenses	1,471,074 90	.1061
Municipal street lighting	4,750 51	.0003
Commercial expenses	1,134,665 59	.0819
General and miscellaneous expenses	1,097,813 03	.0792
General amortization	207,898 44	.0150
Taxes assignable to gas operations	1,167,799 76	.0843
Uncollectible gas bills	63,916 50	.0046
Total Operating Expenses	$13,194,869 57	.9520

[fol. 198] 185. The operating revenues and expenses of plaintiff for the year 1923 summarized are as follows:

Revenues

Sales of Gas:	Amount	Per M cu. ft. based on sales
Municipal	$80,614.64	.7500
Private consumers	17,426,606.81	1.1470
Total sales	$17,507,221.45	1.1442
Miscellaneous Operating Revenues:		
Gas merchandise and jobbing revenue	282,568.21	.0184
Sales of residuals and by-products	60,925.17	.0040
	$343,493.38	.0224
Total Revenues	$17,850,714.83	1.1666

Expenses

Operating Expenses:		
Production expenses	$8,354,264.15	.5460
Transmission and distribution expenses	1,723,750.75	.1127
Municipal street lighting expenses	4,196.78	.0003
Commercial expenses	1,311,592.56	.0857
General and miscellaneous expenses	1,144,245.57	.0749
General amortization	229,505.61	.0150
Taxes assignable to gas operations	1,322,113.56	.0863
Uncollectible gas bills	54,849.00	.0036
Total Operating Expenses	$14,144,519.09	.9245

186. To produce gas of the standard delivered during the year 1922, plaintiff used an average of 4.09 gallons of gas oil and an average of 32.53 pounds of generator fuel [fol. 199] per thousand cubic feet ade. To produce gas of the standard delivered during 1923, plaintiff used an average of 3.52 gallons of oil and 32.88 pounds of generator fuel per thousand cubic feet of gas made.

The cost to furnish gas of a standard not less than 650 British thermal units per cubic foot exceeds the cost of gas of the standard furnished by plaintiff during the year 1922 by not less than 2.26 cents per thousand cubic feet sold.

The cost to furnish gas of a standard of not less than 650 British thermal units per cubic foot exceeds the cost of gas of the standard furnished by plaintiff during the year 1923 by not less than 5.47 cents per thousand cubic feet sold.

187. The total operating revenue of plaintiff for the year ended December 31, 1922, was $1.2411 per thousand cubic feet of gas sold. Calculated at the rate prescribed by Chapter 899 of the Laws of 1923 such operating revenue for the year 1922 would have been $1.0150 per thousand cubic feet sold. The total operating expenses for the year ended December 31, 1922, were $0.9520 per thousand cubic feet of gas sold. Producing and delivering gas of the standard fixed by chapter 899 of the Laws of 1923, namely, gas of a standard of not less than 650 British thermal units per cubic feet, the total operating expenses for the year 1922 would have been $0.9746 per thousand cubic feet. The net operating revenue of plaintiff for the year ended December 31, 1922, under the conditions prescribed by Chapter 899 of the Laws of 1923 would have been 4.04 cents per thousand cubic feet of gas sold.

188. The total operating revenue of plaintiff for the year ended December 31, 1923, was $1.1666 per thousand cubic feet of gas sold. Calculated at the rate prescribed by [fol. 200] Chapter 899 of the Laws of 1923 such operating revenue for the year 1923 would have been $1.0206 per thousand cubic feet sold. The total operating expenses for the year ended December 31, 1923, were $0.9245 per thousand cubic feet of gas sold. Producing and delivering gas of the standard fixed by Chapter 899 of the Laws of 1923, namely, gas of a standard of not less than 650 British ther-

mal units per cubic feet, the total operating expenses for the year 1923 would have been $0.9792 per thousand cubic feet. The net operating revenue of plaintiff for the year ended December 31, 1923, under the conditions prescribed by Chapter 899 of the Laws of 1923 would have been 4.04 cents per thousand cubic feet of gas sold.

189. The net operating revenue of plaintiff for the year 1922, under the conditions prescribed by Chapter 899 of the Laws of 1923, namely, 4.04 cents per thousand cubic feet of gas sold, would yield approximately one per cent on the fair value of plaintiff's property and less than two per cent on the amount appearing on plaintiff's books.

190. The net operating revenue of plaintiff for the year 1923, under the conditions prescribed by Chapter 899 of the Laws of 1923, namely, 4.04 cents per thousand cubic feet of gas sold, would yield less than one and one-half per cent on the fair value of plaintiff's property, and less than one and one-half per cent on the amount appearing on plaintiff's books.

191. The reasonable and necessary cost to plaintiff to furnish gas of a standard of not less than 650 British Thermal Units as prescribed by Chapter 899 of the Laws of 1923, would be at least $0.9356 per thousand cubic feet of [fol. 201] gas sold; the income from the sale of gas, gas appliances and residuals would aggregate $1.0206; the yield to plaintiff would be $0.085 per thousand cubic feet or $1,300,531.71 per annum. This is the equivalent of 2.364 per cent upon $55,000,000, the fair value of plaintiff's property dedicated to public use on the first day of June, 1923.

On December 31, 1923, the fair value of plaintiff's property dedicated to public use amounted to $58,092,513. This same yield would be the equivalent of 2.24 per cent upon that amount.

If the plaintiff should be permitted to continue to make and distribute 587 B. T. U. gas as in the year 1923, the cost of manufacture and distribution, reduced by the smaller quantity and lower price of gas oil utilized, would be $0.9049 per thousand cubic feet, and the sale of this gas at the price nominated in the statute would yield $1,770,253.16 per annum, which is the equivalent of 3.22 per cent upon $55,000,000 and 3.05 per cent upon $58,092,513.

If the plaintiff should be permitted to supply to its consumers 537 B. T. U. gas, the cost of manufacture and distribution, reduced by the smaller quantity and lower price of gas oil utilized would be $.8685 per thousand cubic feet, and the sale of this gas at the price nominated in the statute would yield $2,327,187 per annum, which is the equivalent of 4.23 per cent upon $55,000,000, and the equivalent of 4 per cent upon $58,092,513.

192. The rate of One Dollar per thousand cubic feet of gas, whether of the standard required by the order of the Public Service Commission in operation at the time the statute in question took effect, namely, a minimum of 537 B. T. U.'s; or of the standard actually supplied by plaintiff [fol. 202] to its consumers at that time, namely, 587 B. T. U.'s; or of the standard prescribed by the statute, namely, 650 B. T. U.'s was, is and will continue to be confiscatory.

193. The reasonable and proper rate of return upon the present value of the plaintiff's property used and useful in its business is not less than eight per cent per annum.

I recommend that it be adjudged:

1. That the statute does not violate an existing contract made between the plaintiff and the defendant, the Public Service Commission of the State of New York.

2. That the order of the Public Service Commission dated August 30, 1922, and the acceptance thereof by the plaintiff did not constitute a subsisting contract between the State of New York or the Public Service Commission thereof on the one hand and the plaintiff corporation on the other.

3. That the statute has been proved to be confiscatory as to the plaintiff beyond a reasonable doubt and is invalid as violative of the provisions of section 1 of article 14 of the Constitution of the United States of America.

4. That the statute is void in its entirety.

5. That plaintiff has no adequate remedy at law for the damage and injury which will result from the enforcement of said act and that the same will be irreparable.

6. That plaintiff is entitled to a decree against defendants forever restraining them and each of them and each of [fols. 203 & 204] their officers, agents, servants and employees, their successors in office and any and every person acting or purporting to act under or by virtue of the provisions of said Act of the Legislature of the State of New York, from in any way enforcing or attempting to enforce the provisions of said act against plaintiff, or from instituting or prosecuting at law or in equity, by summons, writ, petition, bill or otherwise for the purpose of compelling compliance with or inflicting any penalty, forfeiture or damage for non-compliance with said act.

7. That plaintiff is entitled to have such other, further or different relief as may seem meet and the nature of the suit require.

Almet Reed Latson, Special Master.

[fol. 205] In United States District Court

[Title omitted]

Notice of Filing Plaintiff's Exceptions

Sirs: Please take notice that the within exceptions of the plaintiff to the report of the Special Master herein, made and filed March 21, 1925, were this day filed in the office of the Clerk of the United States District Court for the Eastern District of New York.

Yours, etc., Cullen & Dykman, Solicitors for the Plaintiff, 177 Montague Street, Brooklyn, New York.

Dated Brooklyn, New York, April 10, 1925.

To Charles G. Blakeslee, Esq., Solicitor for Defendants, William A. Prendergast, et al., constituting the Public Service Commission of the State of New York; John Holley Clark, Jr., Esq., Solicitor for Defendant Albert Ottinger, as Attorney General of the State of New York.

[fol. 206] IN UNITED STATES DISTRICT COURT

[Title omitted]

PLAINTIFF'S EXCEPTIONS TO THE REPORT OF THE SPECIAL MASTER

Now comes the plaintiff, The Brooklyn Union Gas Company, and excepts to the findings of fact and conclusions of law filed herein on March 21, 1925, by Almet Reed Latson, Esq., Special Master, in the following particulars, to wit:

I. Excepts to finding marked "28."

II. Excepts to so much of finding marked "31" as finds that the evidence furnishes data for two methods of estimating the original cost of construction of property acquired by plaintiff on November 4, 1895 and to the application thereof and to the failure of the Special Master in connection with said finding to include in such estimates any [fol. 207] allowance for franchises, working capital or going concern value.

III. Excepts to finding marked "66."

IV. Excepts to finding marked "70."

V. Excepts to so much of finding marked "71" as finds that on June 1, 1923, the value of the plaintiff's land unimproved was $3,000,000 and to the failure of the Special Master to find in connection with said finding that the fair and reasonable market value of land unimproved on said date was $3,451,600; and further excepts to so much of the said finding as finds that the value of the plaintiff's land unimproved on December 31, 1923 was the sum of $3,161,469 and to the failure of the Special Master to find in connection with said finding that the fair and reasonable market value of the said land unimproved on said date was $3,613,069.

VI. Excepts to the failure of the Special Master to find in connection with findings marked "76" "77" and "108," that the cost to reproduce, as of June 1, 1923, buildings, structures, gas manufacturing plants and stations, including holders, is unaffected by any amounts necessary on said date to put the same in a condition equal to

new and further excepts to any deduction from such reproduction cost and especially in the respective sums of $20,756 and $528,368.40.

VII. Excepts to so much of finding marked "78" as may be taken to indicate that the expenditure required to restore the buildings therein named to a condition equal to new is any indication of approaching obsolescence or inadequacy tending to lessen the worth of said buildings and plant equipment.

VIII. Excepts to so much of finding marked "79" as may be taken to indicate that the expenditure required to restore various buildings and plant equipment included therein is any indication of depreciation, including wear and [fol. 208] tear, obsolescence, inadequacy or other causes tending to lessen the worth of said buildings and plant equipment.

IX. Excepts to the failure of the Special Master to include in the finding marked "81" the statement in his opinion at page 50 that "the evidence also shows that these installations were under different conditions and would be improperly comparable with the larger problem of reproducing the system, unless appropriate allowance be made for equalizing various features which differentiate the respective installations.

X. Excepts to finding marked "82."

XI. Excepts to finding marked "105" and further excepts to the failure of the Special Master to find, in connection with said finding, a reasonable allowance for omissions and contingencies, organization and development prior to construction, engineering and general contractors' expenses and profit, interest during construction, taxes during construction, administrative, legal and miscellaneous general expenses during construction and cost of financing in the sum of $21,206,775.

XII. Excepts to finding marked "106" and further excepts to the failure of the Special Master to find, in connection with said finding, an allowance for franchises in the sum of $3,050,006.

XIII. Excepts to so much of finding marked "107" as finds that a fair and reasonable amount of working capital

for plaintiff, exclusive of such working capital as is required to manufacture and supply gas to the so-called subsidiary companies, is the sum of $5,000,000, and further excepts to the failure of the Special Master to find, in connection with said finding, that the fair and reasonable amount of such working capital is the sum of $6,000,000.

XIV. Excepts to finding marked "108" and to the failure of the Special Master to find, in connection with said find-
[fol. 209] ing that the cost to reproduce the manufacturing plants, distribution system and other property owned by plaintiff used and useful in the public service as of June 1, 1923, at the prices of labor and material then prevailing was and is, after deducting the portion thereof devoted to the use of the so-called subsidiary companies, at least the sum of $94,393,735.00, made up as follows:

Land	$3,451,600.
Manufacturing Plants and Stations Gas Holders	15,113,366.
Buildings and Structures	7,149,685.
Trunk Lines and Mains	19,073,210.
Gas Services	6,256,507.
Gas Meters	4,550,162.
Equipment	653,132.
Working Capital	7,000,000.
Omissions and Contingencies	755,668.
Engineering and General Contractor's Expenses and Profit	5,471,951.
Administrative, Legal and Miscellaneous General Expense during Construction	1,189,097.
Interest during Construction	5,092,494.
Taxes during Construction	497,565.
Organization and Development prior to Construction	4,000,000.
Cost of Financing	4,200,000.
Franchise	3,050,000.
Going Concern Value	16,055,200.
	$103,559,637.
Deduct portion of above property and Working Capital devoted to use of so-called subsidiary companies	9,165,902.
	$94,393,735.

XV. Excepts to so much of the finding marked "109" as finds that the present fair value of plaintiff's property [fol. 210] inventoried and proved to be used and useful as of June 1, 1923, is $55,000,000, exclusive of the property devoted to the use of the so-called subsidiary companies; and to so much as finds that plaintiff was and is entitled to earn a fair return upon the amount of $58,092,513 found as the value of plaintiff's property used and useful in the public service on December 31, 1923; and further excepts to the failure of the Special Master to find, in connection with said finding, that the present value of plaintiff's property inventoried and proved to be used and useful as of June 1, 1923, is $93,844,610.60, exclusive of the property devoted to the use of the so-called subsidiary companies, and that after the additions, improvements and extensions thereto used and useful in the public service and made between June 1, 1923 and December 31, 1923, amounting to $3,856,971, of which $764,458 represents property devoted to the use of the so-called subsidiary companies, plaintiff was and is entitled to earn a fair return upon the amount of $96,937,123.60 as the value of the plaintiff's property used and useful in the public service on December 31, 1923.

XVI. Excepts to so much of finding marked "110" as fixes going concern value at $6,000,000 and fails to include an allowance for this item either in reproduction cost or in adopting a rate base; and further excepts to the failure of the Special Master in connection with said finding to fix such going concern value at the sum of $16,055,200 and include the same in the rate base.

XVII. Excepts to finding marked "123."

XVIII. Excepts to so much of finding marked "151" as finds that the amount of gas "unaccounted for" is dependent upon consumption per mile of main.

XIX. Excepts to finding marked "153."

XX. Excepts to finding marked "161" and further excepts to the failure of the Special Master, in connection with said finding, to include he sum of $108,668 in operating ex- [fol. 211] penses for the year 1923, for the purpose of testing the statute.

XXI. Excepts to so much of finding marked "162" as fails to include the sum of $94,524.89 in operating expenses for the year 1923 for the purpose of testing the statute.

XXII. Excepts to finding marked "164."

XXIII. Excepts to finding marked "165."

XXIV. Excepts to finding marked "166."

XXV. Excepts to finding marked "167."

XXVI. Excepts to finding marked "168."

XXVII. Excepts to finding marked "171."

XXVIII. Excepts to so much of finding marked "180" as finds that in the calculation therein set forth there have been improperly included two items, one, expenses of the present litigation $94,524.89, and the other the cost of adjusting the appliances on consumers' premises to conform to the order of the Public Service Commission, dated August 30, 1922, $108,668, and deducting these items makes the total general and miscellaneous expenses $1,144,245.51 and the cost per thousand cubic feet sold $0.0749 and further excepts to the failure of the Special Master, in connection with said findings, to find general and miscellaneous expenses in the sum of $1,347,438.57 or $.0880 per thousand cubic feet sold.

XXIX. Excepts to so much of finding marked "181" as finds the gross earnings tax in the sum of $105,654.33 or $.0068 per thousand cubic feet sold and the total taxes in the sum of $1,322,113.56 or $0.0863 per thousand cubic feet sold; and further excepts to the failure of the Special Master, in connection with said finding, to find the gross earnings tax in the amount of $133,254.33 or $.0087 per thousand cubic feet sold and the total taxes in the sum of $1,349,-713.56 or $0.0882 per thousand cubic feet sold.

[fol. 212] XXX. Excepts to so much of finding marked "185" as finds the general and miscellaneous expenses in the sum of $1,144,245.57 or $.0749 per thousand cubic feet sold and as finds taxes assignable to gas operations in the sum of $1,322,113.56 or $.0863 per thousand cubic feet sold and the total operating expenses in the sum of $14,144,-519.09 or $.9245 per thousand cubic feet sold; and further

excepts to the failure of the Special Master, in connection with said finding, to find general and miscellaneous expenses in the sum of $1,347,438.57 or $.0880 per thousand cubic feet sold, taxes assignable to gas operations in the sum of $1,349,713.56, or $.0882 per thousand cubic feet sold and the total operating expenses in the sum of $14,375,310.98 or $.9395 per thousand cubic feet sold.

XXXI. Excepts to so much of finding marked "188" as finds that the total operating expenses for the year ended December 31, 1923, were $0.9245 per thousand cubic feet of gas sold and that producing and delivering gas of the standard fixed by Chapter 899 of the Laws of 1923, namely, gas of a standard of not less than 650 British thermal units per cubic foot, the total operating expenses for 1923 would have been $0.9792 per thousand cubic feet sold, and that the net operating revenue of plaintiff for the year ended December 31, 1923, under the conditions prescribed by Chapter 899 of the Laws of 1923, would have been 4.04 cents per thousand cubic feet of gas sold; and further excepts to the failure of the Special Master, in connection with said finding, to find that the total operating expenses for the year ended December 31, 1923, were $0.9395 per thousand cubic feet of gas sold and that producing and delivering gas of the standard fixed by Chapter 899 of the Laws of 1923, namely, gas of a standard of not less than 650 British thermal units per cubic foot, the total operating expenses for the year 1923 would have been $0.9942 per thousand cubic feet sold and that the net operating revenue of plaintiff for the year ended December 31, 1923, under the conditions prescribed by Chapter 899 of the Laws of 1923, would have [fol. 213] been 2.64 cents per thousand cubic feet of gas sold.

XXXII. Excepts to finding marked "190" and further excepts to the failure of the Special Master, in connection with said finding, to find that the net operating revenue of plaintiff for the year 1923, under the conditions prescribed by Chapter 899 of the Laws of 1923 would have been 2.64 cents per thousand cubic feet of gas sold or a yield of less than one-quarter of one per centum on the value of the plaintiff's property and less than one and one-quarter per centum on the amount appearing on plaintiff's books.

XXXIII. Excepts to so much of the finding marked "191" as finds the reasonable and necessary cost to plaintiff to furnish gas of a standard of not less than 650 British thermal units, as prescribed by Chapter 899 of the Laws of 1923, would be at least $0.9356 per thousand cubic feet of gas sold; that the yield to plaintiff would be $0.085 per thousand cubic feet sold or $1,300,531.71 per annum and that this is the equivalent of 2.364 per centum upon $55,000,000 found to be the fair value of plaintiff's property dedicated to public use on the 1st day of June, 1923; that on December 31, 1923, the fair value of plaintiff's property dedicated to public use amounted to $58,092,513 and that the same yield would be the equivalent of 2.24 per centum upon that amount; that if plaintiff should be permitted to continue to make and distribute 587 British thermal units gas as in the year 1923 the cost of manufacture and distribution reduced by the smaller quantity and lower price of gas oil utilized would be $0.9049 per thousand cubic feet sold, and the sale of this gas at the price nominated in the statute would yield $1,770,253.16 per annum; and that if plaintiff should be permitted to supply to its consumers 537 British thermal units gas, the cost of manufacture and distribution reduced by the smaller quantity and lower price of gas oil utilized would be $.8685 per thousand cubic feet sold and the sale of this gas at the price nominated in the [fol. 214] statute would yield $2,327,187 per annum; and further excepts to the failure of the Special Master, in connection with said finding, to find that the reasonable and necessary cost to plaintiff to furnish gas of a standard of not less than 650 British thermal units as prescribed by Chapter 899 of the Laws of 1923 would be at least $0.9506 per thousand cubic feet of gas sold; to the failure so to find that the yield to plaintiff would be $0.070 per thousand cubic feet sold or $1,072,183.72 per annum, the equivalent of 1.14 per centum upon $93,844,610.60, the fair value of plaintiff's porperty dedicated to public use on the 1st day of June, 1923; to the failure so to find that on December 31, 1923, the fair value of plaintiff's property dedicated to public use amounted to $96,937,123.60 and that this same yield would be the equivalent of 1.10 per centum upon that amount; to the failure so to find that if plaintiff should be permitted to continue to make and distribute 587 British thermal units gas as in the year 1923 the cost of manufac-

ture and distribution reduced by the smaller quantity and lower price of gas oil utilized would be $.9199 per thousand cubic feet sold and the sale of this gas at the price nominated in the statute would yield $1,540,747.50 per annum, which is the equivalent of 164 per centum upon $93,844,610.60 and 1.59 per centum upon $96,937,123.60, and to the failure so to find that if plaintiff should be permitted to supply to its consumers 537 British thermal units gas the cost of manufacture and distribution reduced by the smaller quantity and lower price of gas oil utilized would be $.8835 per thousand cubic feet sold and the sale of this gas at the price nominated in the statute would yield $2,097,681.14 per annum, which is the equivalent of 2.23 per centum upon $93,844,610.60 and the equivalent of 2.16 per centum upon $96,937,123.60.

[fol. 215] XXXIV. Plaintiff further excepts to the recommendation of the Special Master that it be adjudged:

1. That the statute does not violate an existing contract made between the plaintiff and the defendant, the Public Service Commission of the State of New York.

2. That the order of the Public Service Commission, dated August 30, 1922, and the acceptance thereof by the plaintiff did not constitute a subsisting contract between the State of New York or the Public Service Commission thereof, on the one hand, and the plaintiff corporation on the other.

XXXV. Plaintiff further excepts to the failure of the Special Master to recommend that it be adjudged:

1. That Chapter 899 of the Laws of 1923 of the State of New York entitled, "An Act to amend the Public Service Commission Law, in relation to the charge for illuminating gas in cities containing a population of one million or over," which became a law June 2, 1923, is invalid as violative of the provisions of Section 10 of Article 1 of the Constitution of the United States of America.

Cullen and Dykman, Solicitors for Plaintiff, 177 Montague Street, Brooklyn, N. Y.

Dated Brooklyn, New York, April 10, 1925.

[fol. 216] IN UNITED STATES DISTRICT COURT

[Title omitted]

NOTICE OF FILING DEFENDANTS' EXCEPTIONS

SIRS: Please take notice that the within is a copy of the exceptions of the defendant Albert Ottinger, as Attorney-General of the State of New York, to the report of Mr. Albert Reed Latson, Special Master in this action, which exceptions were this day duly filed and entered in the office of the clerk of the United States District Court, for the Eastern District of New York.

Dated, New York, April 10, 1925.

Yours, etc., Albert Ottinger, Attorney-General of the State of New York.

Office & P. O. Address: 49 Chambers St., New York City, N. Y.

To Cullen & Dykman, Solicitors for Plaintiff.

Office & P. O. Address: 177 Montague Street, Brooklyn, New York.

[fol. 217] IN UNITED STATES DISTRICT COURT

[Title omitted]

EXCEPTIONS OF DEFENDANT ALBERT OTTINGER TO REPORT OF SPECIAL MASTER

Now comes the defendant Albert Ottinger, as Attorney-General of the State of New York, and excepts to the Findings of Fact and Conclusions of Law filed herein by Almet Reed Latson, Special Master, in the following particulars, to wit:

1. Defendant excepts to the Finding marked "31" of the Master's report on the ground that the same is not supported by the evidence, is contrary to the evidence and against the weight thereof.

Defendant excepts to the Finding marked "31" of the Master's report on the further ground that said Finding is not a fair statement of the evidence nor are the conclusions

therein contained fair conclusions to be drawn from the evidence. The Master should have found that while the actual original cost of the property acquired by the plaintiff on November 4, 1895, was not established by the evidence, yet the entries in such books and the method used in keep-
[fol. 218] ing such books is indicated, among other things, by the fact that as found in Finding marked "28" of the Master's report, no credits were made for properties withdrawn from service. It conclusively showed that the capital accounts appearing on such books greatly overstated the actual investment in or cost of such properties, and such cost did not exceed the sum of $28,800,000.

Defendant further excepts to so much of the Finding marked "31" of the Master's report as contained in the second paragraph thereof, page 102, purporting to describe the testimony given by a witness for the defendant in regard to the books of the vendor companies, on the ground that the same is not supported by the evidence, is contrary to the evidence and is against the weight thereof.

Defendant further excepts to that part of Finding marked "31" of the Master's report on page 103 thereof, under the sub-title (a) reading as follows:

"At the time these properties were acquired by the plaintiff, November 4th, 1895, journal entries upon the books of the plaintiff recording the transactions indicated a valuation, inclusive of land, but exclusive of franchises, of $25,749,731.93,"

on the ground that the same is contrary to the evidence, and not supported by the evidence. The said figure of $25,749,731.93 did not indicate a valuation, but was merely a figure entered on the books indicating the amount of stock which the plaintiff company might be able to sell on the basis of the exorbitant rates then charged.

[fol. 219] Defendant excepts to so much of Finding marked "31" of the Master's report where it appears on page 104 thereof, as follows:

"These figures would indicate an original cost of $42,717,199,"

on the ground that the said Finding is contrary to the evidence and against the weight thereof.

Defendant excepts to so much of Finding marked "31" of the Master's report on page 104 thereof which states that as indicates a Finding that the cost of property used by the subsidiary companies is approximately 10% of the total property, "or $4,200,000," on the ground that the same is contrary to the evidence and there is no evidence tending to support it. That portion of plaintiff's property used by the subsidiaries is in excess of 10%, and the cost of the plaintiff's entire property was much below the figure found.

Defendant further excepts to so much of the Finding marked "31" of the Master's report appearing on page 104 thereof which reads:

"This method of anaylsis would lead to the opinion that the original cost of the property owned by the plaintiff on June 1, 1923, exclusive of property used by its subsidiaries, was $38,517,199,"

on the ground that the same is contrary to the evidence, not supported by the evidence and against the weight thereof; and on the further ground that the figure named is excessive in respect to the cost of plaintiff's property.

[fol. 220] Defendant further excepts to so much of the Finding marked "31" of the Master's report as is contained in paragraph marked "(b)" on page 104 of the report, on the ground that the same is contrary to the evidence, not supported by the evidence and against the weight thereof. The witness called to testify as to what the property ought to have cost, was not qualified on this subject and did not use a basis or method of calculation reasonably calculated to obtain an accurate figure.

Defendant excepts to so much of the Finding marked "31" of the Master's report on page 104 which reads as follows:

"These figures in each instance exclude any valuation for franchises, working capital or going concern value,"

on the ground that the same is not supported by the evidence, is contrary to the evidence and against the weight thereof.

Defendant excepts to the Finding marked "31" of the Master's report on the ground that whatever was actually paid included the valuation of the franchise, working capi-

tal and going concern value and no separate valuation should be made for them.

Defendant excepts to so much of the Finding marked "31" of the Master's report on page 105 thereof, which reads:

"Defendants offered no evidence on this subject, except that the books of account of the vendor corporation were put in evidence by the defendants,"

on the ground that the said Finding is not supported by the evidence, is contrary to the evidence and against the weight thereof.

[fol. 221] 2. Defendant excepts to the Finding marked "40" of the Master's report on the ground that the same is not supported by the evidence, is contrary to the evidence and against the weight thereof.

3. Defendant excepts to so much of Finding marked "45" of the Master's report which reads:

"Each of the properties described in this finding and the structures and equipment thereon are necessary to plaintiffs and used and useful in the public service, and the defendants offered no evidence to the contrary." (p. 113.)

on the ground that the said Finding is not supported by the evidence, is contrary to the evidence and against the weight thereof; and on the further ground that several of the buildings, structures and a large part of the equipment mentioned in said Finding are antiquated and obsolete, and the same are not necessarily used and useful by the plaintiff in its business; and on the further ground that the facts in regard to this were brought out by defendants on cross-examination of plaintiff's witnesses.

4. Defendant excepts to the Finding marked "48" of the Master's report insofar as said Finding purports to indicate that the book balances showed the actual cost of the property of the plaintiff company, on the ground that such books balances do not show such cost but were grossly in excess of such cost.

5. Defendant excepts to so much of Finding marked "49" of the Master's report which purports to indicate that the

[fol. 222] totals of $49,767,200, $53,462,964, $43,697,232 and $46,741,589 represent the actual investment of plaintiff or its vendor companies, on the ground that said figures are grossly excessive as indications of such cost.

6. Defendant excepts to the Finding marked "57" of the Master's report which finds in substance that the books of account of the plaintiff company were kept in accordance with the rules and regulations of the Public Service Commission, and that said books, etc., accurately set forth the transactions entered therein, on the ground that the same is not supported by the evidence, is contrary to the evidence and against the weight thereof, as is shown in several instances by the Findings of the Master, numbered "67" and "68."

7. Defendant excepts to the Finding marked "69" of the Master's report insofar as it finds that (p. 120):

"Defendants upon the trial introduced no evidence whatever upon the existence, use and usefulness of any item or quanity shown in such inventory or any unit price applied therein,"

on the ground that the same is not supported by the evidence, is contrary to the evidence and against the weight thereof; and on the further ground that the defendant showed on cross-examination that exhibits introduced by plaintiff contained a large number of items which were not used and useful in plaintiff's business.

8. Defendant excepts to the Finding marked "71" of the [fol. 223] Master's report insofar as it finds that (p. 122):

"On that date the value of the land, unimproved, was $3,000,000. There is no evidence of any decrease in the value of any of the said parcels of land since June 1st, 1923,"

on the ground that the value therein found is unreasonable and excessive and not supported by the evidence, is contrary to the evidence and against the weight thereof; and on the further ground that (p. 122):

"The above described parcels of land are necessary to the plaintiff and used and useful in the public service and defendants offered no evidence to the contrary,"

is contrary to the evidence, is not supported by the evidence and against the weight thereof; and on the further ground that the defendant showed by cross-examination of plaintiff's witnesses that several parcels of the real estate there detailed are not used and useful by the plaintiff in its business.

9. Defendant excepts to the Finding marked "75" of the Master's report which finds that (p. 123):

"The buildings, structures, gas manufacturing plants, stations, gas holders, trunk lines and mains, services and meters and general equipment owned and used by the plaintiff in its gas business have been and are maintained in a high state of repair and in excellent operating condition; proper repairs thereto and renewals and replacements thereof have been made as and when required; and no diminution or loss in productive capacity has been sustained,"

on the ground that the same is not supported by the evidence, is contrary to the evidence and is against the weight thereof; and for the further reason that the Findings and [fol. 224] Conclusions contained therein are contrary to sound reasoning and human experience.

10. Defendant excepts to the Finding marked "76" of the Master's report on the ground that the same is contrary to the evidence, is not supported by the evidence and against the weight thereof; and on the further ground that the figure of $20,756 is grossly inadequate to measure the depreciation in the buildings and structures of the plaintiff company.

11. Defendant excepts to the Finding marked "77" of the Master's report on the ground that the same is not supported by the evidence, is contrary to the evidence and against the weight thereof; and on the further ground that the figure of $528,368.40 is grossly inadequate to measure the depreciation in the manufacturing plants and stations and gas holders of the plaintiff company.

12. Defendant excepts to the Finding marked "78" of the Master's report on the ground that the same is not supported by the evidence, is contrary to the evidence and

against the weight thereof; and on the further ground no proof was required to show that natural causes tend to lessen the worth of all earthly things; and on the further ground that the so-called evidence as to the expenditure required to restore the buildings to a condition equal to new did not give an adequate measure of the actual depreciation of such buildings.

[fol. 225] 13. Defendant excepts to the Finding marked "79" of the Master's report on the ground that the same is not supported by the evidence, is contrary to the evidence and against the weight thereof; and on the further ground that no evidence is necessary to show causes existed tending to lessen the worth of all earthly things; and on the further ground that the so-called evidence as to what expenditure would be required to restore the buildings and plant equipment to a condition equal to new, did not give an adequate measure of the actual depreciation of any value of such buildings and plant equipment.

14. Defendant excepts to the Finding marked "88" of the Master's report on the ground that the same is not supported by the evidence, is contrary to the evidence and against the weight thereof; and on the further ground that the pavement in the streets does not increase the worth or value of the mains or services and also that the amounts allowed were not the actual cost of the paving.

15. Defendant excepts to the Finding marked "107" of the Master's report on the ground that the same is not supported by the evidence, is contrary to the evidence and against the weight thereof; on the further ground that this allowance for working capital is excessive; and on the further ground that there is no evidence tending to support the finding that (p. 128):

"The average working capital of plaintiff during the year 1923 was actually $10,184,975.63."

[fol. 226] 16. Defendant excepts to the Finding marked "108" of the Master's report purporting to find the reproduction cost of the property owned by the plaintiff and devoted to the service of the consumers as of June 1, 1923, on the ground that the cost and figures therein found are

excessive and unreasonable, are not supported by the evidence, are contrary to the evidence and against the weight thereof; and for the further reason that the Master has failed to follow his own Finding "105" of his report; and for the further reasons set forth in these exceptions to the Master's report.

17. Defendant excepts to the Finding marked "109" of the Master's report on the ground that the figures contained therein are excessive and unreasonable, are not supported by the evidence, are contrary to the evidence and against the weight thereof; and further upon the ground that the Findings of Fact and Conclusions of Law therein contained are not in accordance with the established principles of law involved; and for the further reason that the Master has given undue weight to the reproduction cost estimate; and for the further reasons hereinbefore set forth in prior exceptions to the Master's report herein.

18. Defendant excepts to the Finding marked "110" of the Master's report on the ground that there was no competent evidence before the Master upon which any going concern value could be fixed; and on the further ground that there is no basis in the history of the company for making an allowance for going value whatsoever; and on [fol. 227] the further ground that where property is valued, as here, as a going concern, and therefore not subject to deduction for depreciation, there is no basis for an allowance of going value, even if the history of the company should support such allowance.

19. Defendant excepts to the Finding of the Master marked "111" insofar as he finds that (p. 130):

"Plaintiff ought reasonably to have a reserve manufacturing plant capacity equal to 25% of its rated capacity,"

on the ground that it is not supported by the evidence, is contrary to the evidence and against the weight thereof. The reserve actually required varies with the progress of plant construction; the evidence shows it may safely be reduced to 10% and should never go above twenty-five per cent.

20. Defendant excepts to the Finding marked "117" of the Master's report on the ground that the same is not supported by the evidence, is contrary to the evidence and against the weight thereof.

21. Defendant excepts to the Finding marked "119" of the Master's report on the ground that the basis for the division of expenses is not supported by the evidence, is contrary to the evidence and against the weight thereof; and on the further ground that it appears that the allocations of services performed by the plaintiff and its subsidiaries are made with the purpose and with the intent of increasing operating and distributing costs of the plaintiff over what [fol. 228] they should reasonably be, and placing upon plaintiff a larger measure of the burden of the expenses of the entire "Brooklyn Union System" than is fair and reasonable.

22. Defendant excepts to the Finding marked "120" of the Master's report on the ground that the basis for the division of expenses is not supported by the evidence, is contrary to the evidence and against the weight thereof; and furthermore, that it appears that the allocations of services performed by the plaintiff and its subsidiaries are made with the purpose and with the intent of increasing operating and distributing costs of the plaintiff over what they ought reasonably and actually be, and placing upon plaintiff a larger measure of the burden of the expenses of the entire "Brooklyn Union System" than is fair and reasonable.

23. Defendant excepts to such part of Finding marked "127" of the Master's report which says that

"such operating expenses 7.98% could be applied to the subsidiary companies during the first five months of 1924,"

The Master should have found from the testimony that the percentages contained in said Finding marked "127" of the Master's report should be applied to the subsidiary companies during the first five months of 1924.

24. Defendant excepts to the Finding marked "129" of the Master's report on the ground that the same is not supported by the evidence, is contrary to the evidence and

against the weight thereof; and for the further reason that the testimony clearly shows that the item is not covered [fol. 229] in the allocation of expenses made to the subsidiary companies, and the percentages in dicated should have been deducted from plaintiff's operating expenses.

25. Defendant excepts to the Finding marked "137" of the Master's report on the ground that the testimony shows that he amount of $89,491.62 should have been borne by the subsidiary companies for their share of the promotion expenses and $62,903.26 deducted from the plaintiff's operating expenses.

26. Defendant excepts to that portion of the Finding marked "138" of the Master's report which reads as follows:

"Subject to such alteration as would thereby be effected in the allocation of various expenses deemed to include those in question made easly in each year based upon estimated sales of gas by the subsidiaries of the plaintiff and estimated expenses for the year covering the various items of operating cost,"

on the ground that the same is not suported by the evidence, is contrary to the evidence and against the weight thereof.

27. Defendant excepts to the Finding marked "139" of the Master's report on the ground that the same is not supported by the evidence, is contrary to the evidence and against the weight thereof; and upon the further ground that it was readily possible to determine the quality of oil necessary to produce 650 British Thermal Unit gas under usual and ordinary conditions of temperature and atmospheric pressure.

28. Defendant excepts to the Finding marked "140" of [fol. 230] the Master's report on the ground that the same is not supported by the evidence, is contrary to the evidence and against the weight thereof.

29. Defendant excepts to the Finding marked "141" of the Master's report on the ground that the same is not supported by the evidence, is contrary to the evidence and

against the weight thereof; and on the further ground that the figures therein found are unreasonable and excessive.

30. Defendant excepts to the Finding marked "143" of the Master's report on the ground that the same is not supported by the evidence, is contrary to the evidence and against the weight thereof.

31. Defendant excepts to the Finding marked "147" of the Master's report on the ground that the same is not supported by the evidence, is contrary to the evidence and against the weight thereof; and upon the further ground that the business department mentioned in said Findings does not and did not function for the purpose of "attaching" consumers. Appliances that are sold are sold at a profit and said profits are included in the operating revenue of the company. Development of new business is largely a natural process obtained without any appreciable cost for solicitation, advertising, attaching consumers, etc.

[fol. 231] 32. Defendant excepts to the Finding marked "154" of the Master's report on the ground that the same is not supported by the evidence, is contrary to the evidence and against the weight thereof; and on the further ground that the percentage allowed is unreasonable and excessive for the plaintiff; and on the further ground that the subsidiaries are not charged with a fair amount for unaccounted for gas. The amount for the plaintiff should be no more than five per cent for the reasons shown in Findings "149," "150," "151," "152" and "153" of the Master's report; and on the further ground that the cross-examination of witnesses developed the unreasonableness of the percentages herein found for unaccounted for gas.

33. Defendant excepts to so much of Finding marked "155" of the Master's report which reads:

"There is no evidence in the record showing or tending to show that the prices of material or the wages paid for labor on the whole will be reduced from the wages and prices now being paid by the plaintiff,"

on the ground that the same is not supported by the evidence, is contrary to the evidence and against the weight thereof, and contrary to the accepted opinions of econo-

mists; and further defendant excepts to that portion of said Finding which reads as follows:

"and the books of plaintiff show the net cost of gas made by plaintiff for its direct consumers,"

on the ground that the same is not supported by the evi- [fol. 232] dence, is contrary to the evidence and against the weight thereof; and upon the further ground that the parent company is burdened with excessive miscellaneous items actually chargeable to the subsidiaries, and that the books of the company, therefore, do not accurately set forth the net cost of gas to its own consumers.

34. Defendant excepts to the Finding marked "160" of the Master's report on the ground that it is not supported by the evidence, is contrary to the evidence and against the weight thereof.

35. Defendant excepts to the Finding marked "163" of the Master's report on the ground that it is not supported by the evidence, is contrary to the evidence and against the weight thereof; and on the further grounds that the items for uncollectible bills are not proper charges to operating expenses for the reason that the law authorizes the plaintiff company to exact from its consumers a reasonable amount in advance to cover two months' consumption of gas; if any loss is incurred therefor for uncollectibles, the said loss is due to the gross carelessness of the company and should not be charged as an operating expense.

36. Defendant excepts to the Finding marked "172" of the Master's report on the ground that the cost of gas made for the year 1922, as therein found, is unreasonable and excessive, is not supported by the evidence and against the [fol. 233] weight thereof. The Master should have found that the reasonable cost for the manufacture of gas was not greater than the cost as found in Finding marked "166" of the Master's report, for the Metropolitan works. He should further have found that the cost of repairs at the works and holder stations, as shown on the books, were unduly excessive and should have been found in an amount approximating the average amounts for these items for the years 1918 to 1923, as appears in Finding marked "164" of the Master's report. He should further have used a

figure for unaccounted for gas not in excess of five (5) per cent, and should have deducted from operating expenses various amounts indicated by the testimony not to have been properly chargeable or really chargeable to subsidiary companies.

37. Defendant excepts to the Finding marked "173" of the Master's report on the ground that the costs of distribution and transmission for the year 1922 are unreasonable and excessive, are not supported by the evidence, are contrary to the evidence and against the weight thereof; and upon the further ground that the figures in said Findings referring to the costs of the distribution repairs and transmission repairs should have been found in an amount approximating the average cost of distribution and transmission repairs for the years 1918 to 1923, as found in Finding marked "165" of the Master's report. The Master should have deducted from such distribution expenses various amounts indicated by the testimony not to have been properly chargeable or really chargeable to subsidiary companies.

[fol. 234] 38. Defendant excepts to the Finding marked "174" of the Master's report on the ground that the figures therein found are total commercial expenses for the year 1922 are excessive and unreasonable, are not supported by the evidence and against the weight thereof; and upon the further ground that the said total commercial expenses of the plaintiff company are burdened by reason of an improper allocation of expense as between the plaintiff company and its subsidiaries. The Master should have deducted from such commercial expenses various amounts indicated by the testimony not to have been properly chargeable or really chargeable to subsidiary companies.

39. Defendant excepts to the Finding marked "175" of the Master's report on the ground that the figures therein found for total general and miscellaneous expenses for the year 1922 are excessive and unreasonable, are not supported by the evidence and against the weight thereof; and upon the further ground that the said total general and miscellaneous expenses of the plaintiff company are burdened by reason of an improper allocation of expense as between the plaintiff company and its subsidiaries; and upon the fur-

ther ground that an item for uncollectible bills for gas appears in said Finding. Said item should be excluded for the reasons hereinbefore set forth in the exception to Finding marked "163" of the Master's report. The Master should have deducted various items indicated by the testi- [fol. 235] mony not to have been properly chargeable or really chargeable to subsidiary companies.

40. Defendant excepts to the Finding marked "176" of the Master's report on the ground that the figures therein found for taxes assignable to the gas operations of the plaintiff company for the year 1922 are excessive and unreasonable, are not supported by the evidence, are contrary to the evidence and against the weight thereof. Certain of these taxes are not based upon a dollar rate and are therefore not applicable in this proceeding.

41. Defendant excepts to the Finding marked "177" of the Master's report on the ground that the cost of gas made for the year 1923, as therein found, is unreasonable and excessive, is not supported by the evidence and against the weight thereof. The Master should have found that the reasonable cost for the manufacture of gas was not greater than the cost as found in the Finding marked "166" of the Master's report, for the Metropolitan works. He should further have found that the cost of repairs at the works and holder stations, as shown on the books, were unduly excessive and should have been found in an amount approximating the average amounts for these items for the years 1918 to 1923, as appears in Finding marked "164" of the Master's report. He should further have used a figure for unaccounted for gas not in excess of five (5) per cent and should have deducted from operating expenses various [fol. 236] amounts indicated by the testimony not to have been properly chargeable or really chargeable to subsidiary companies.

42. Defendant excepts to the Finding marked "178" of the Master's report on the ground that the costs of distribution and transmission for the year 1923 are unreasonable and excessive, are not supported by the evidence, are contrary to the evidence and against the weight thereof; and upon the further ground that the figures in said findings re-

ferring to the costs of distribution repairs and transmission repairs should have been found in an amount approximating the average cost of distribution and transmission repairs for the years 1918 to 1923, as found in Finding marked "165" of the Master's report. The Master should have deducted for such distribution expenses various amounts indicated by the testimony not to have been properly chargeable or really chargeable to subsidiary companies.

43. Defendant excepts to the Finding marked "179" of the Master's report on the ground that the figures therein found for total commercial expenses for the year 1923 are excessive and unreasonable, are not supported by the evidence, are contrary to the evidence and against the weight thereof; and upon the further ground that the said total commecial expenses of the plaintiff company are burdened by reason of an improper allocation of expense as between the plaintiff company and its subsidiaries. The Master should have deducted from such commercial expenses [fol. 237] various amounts indicated by the *the* testimony not to have been properly chargeable or really chargeable to subsidiary companies.

44. Defendant excepts to the Finding marked "180" of the Master's report on the ground that the figures therein found for total general and miscellaneous expenses for the year 1923 are excessive and unreasonable, are not supported by the evidence and against the weight thereof; and upon the further ground that the total general and miscellaneous expenses of the plaintiff company are burdened by reason of an improper allocation of expenses as bet-een the plaintiff company and its subsidiaries; and upon the further ground that an item for uncollectible gas bills appears in said Finding. Said item should be excluded for the reasons hereinbefore set forth in the exception to Finding marked "163" of the Master's report; and upon the further ground that the Master should have found that many of the items included in his calculation of total general and miscellaneous expenses should have been eliminated entirely as unreasonable, excessive and extraordinary.

45. Defendant excepts to the Finding marked "181" of the Master's report on the ground that the figures therein found for taxes assignable to the gas operations of the

plaintiff company for the year 1923 are excessive and unreasonable, are not supported by the evidence, are contrary to the evidence and against the weight thereof. Certain of these taxes are not based upon a dollar rate and are therefore not applicable in this proceeding.

[fol. 238] 46. Defendant excepts to the Finding marked "182" of the Master's report, wherein the total revenues for 1922 are found, on the ground that the same is not supported by the evidence, is contrary to the evidence and against the weight thereof; and on the further ground that the sales to the city of New York should not be included in the calculation of revenues.

47. Defendant excepts to the Finding marked "183" of the Master's report, wherein the total revenues for 1923 are found, on the ground that the same is not supported by the evidence, is contrary to the evidence and against the weight thereof; and on the further ground that the sales to the city of New York should not be included in the calculation of revenues.

48. Defendant excepts to the Finding marked "184" of the Master's report wherein the operating revenues and expenses of the plaintiff company for the year 1922 are summarized, on the ground that the figures therein contained are excessive and unreasonable, are not supported by the evidence and against the weight thereof; and on the further grounds hereinbefore assigned in previous exceptions.

49. Defendant excepts to the Finding marked "185" of the Master's report wherein the operating revenues and expenses of the plaintiff for the year 1923 are summarized, on the ground that the figures therein contained are excessive and unreasonable, are not supported by the evidence, [fol. 239] are contrary to the evidence and against the weight thereof; and upon the further grounds hereinbefore assigned in previous exceptions.

50. Defendant excepts to the Finding marked "186" of the Master's report on the ground that the average quantities of gas oil and generator fuel therein contained for both the years 1922 and 1923 are unreasonable and exces-

sive, are contrary to the evidence, not supported by the evidence and against the weight thereof; furthermore, the difference in the cost to furnish gas of a 650 B. T. U. standard for both the years 1922 and 1923 is excessive and unreasonable.

51. Defendant excepts to the Finding marked "187" of the Master's report, wherein the net operating revenue for the year 1922, under the conditions prescribed by chapter 899 of the laws of 1923, is found, on the ground that the basic figures upon which this calculation is made are not supported by the evidence, are contrary to the evidence and against the weight thereof; and for the further reasons heretofore assigned in previous exceptions covering matters of operating revenue, operating expenses, etc., for the year 1922.

52. Defendant excepts to the Finding marked "188" of the Master's report, wherein the net operating revenue for the year 1923, under the conditions prescribed by chapter 899 of the laws of 1923, is found, on the ground that the basic figures upon which this calculation is made are not supported by the evidence, are contrary to the evidence [fol. 240] and against the weight thereof; and for the further there reasons heretofore assigned to previous exceptions covering matters of operating revenue, operating expenses, etc., for the year 1923.

53. Defendant excepts to the Finding marked "189" of the Master's report, wherein a certain yield is found on the so-called fair value of the plaintiff's property for the year 1922, on the ground that the same is not supported by the evidence, is contrary to the evidence and against the weight thereof; and that the basic figures upon which these calculations are made are incorrect for the reasons hereinbefore set forth in previous exceptions herein.

54. Defendant excepts to the Finding marked "190" of the Master's report, wherein a certain yield is found on the so-called fair value of the plaintiff's property for the year 1923, on the ground that the same is not supported by the evidence, is contrary to the evidence and against the weight thereof; and that the basic figures upon which these cal-

culations are made are incorrect for the reasons hereinbefore set forth in previous exceptions herein.

55. Defendant excepts to the Finding marked "191" of the Master's report, wherein a percentage yield upon the so-called fair value of the plaintiff's property is found as of June 1923, on the ground that the same is not supported by the evidence, is contrary to the evidence and against the weight thereof; furthermore, that the calculations are based upon figures that are incorrect for the reasons hereinbefore set forth previously in these exceptions as to cost [fol. 241] of making gas, net income from the sale of gas, fair value of plaintiff's property, etc.; furthermore, the defendant similarly excepts to the Finding as to the yield to the plaintiff company on December 31, 1923, for the same reasons hereinbefore set forth; furthermore, the defendant excepts to the Finding as to the so-called percentage yield upon the basis of making and distributing 587 B. T. U. gas for the same reasons hereinbefore set forth in this exception; furthermore, the defendant excepts to the so-called yield for making and distributing gas of 537 B. T. U. gas for the same reasons hereinbefore set forth in this exception.

56. Defendant excepts to the Finding marked "192" of the Master's report which finds that the statute in question is confiscatory, on the ground that the same is not supported by the evidence, is contrary to the evidence and against the weight thereof; and for the further reasons hereinbefore set forth in these exceptions.

57. Defendant excepts to the Finding marked "193" of the Master's report which purports to find that the reasonable and proper rate of return is not less than 8%, on the ground that the same is not supported by the evidence, is contrary to the evidence and against the weight thereof; and furthermore, is contrary to the law and disregards the decisions of the Supreme Court of the United States in the Consolidated Gas Company case and other similarly situated companies; and furthermore, that it was neither the [fol. 242] duty nor the province of the Master to find what the reasonable and proper rate of return should be.

58. Defendant excepts to the recommendations of the Master numbered "3," "4," "5," "6," and "7," on the ground that they are not supported by the evidence, are contrary to the evidence and against the weight thereof; are contrary to the law involved; and for the further reasons hereinbefore more specifically set forth in these exceptions.

59. Defendant excepts to the opinion of the Master, repeating and reiterating, as though herein set forth, any and all of the defendant's exceptions to the Master's Findings of Fact and Conclusions of Law as may apply to the statements in said opinion identical with, similar to or bearing upon such Findings of Fact and Conclusions of Law.

60. Defendant in addition to the above general exception excepts to so much of the said opinion of the Master on pages 25 to 27 thereof, in which the Master holds that it was not necessary for plaintiff to actually operate under the statute in question before bringing this suit. The Master should have held that the Company should have reduced its rate to that fixed in the statute on the day such statute went into force and should have complied with the standard provisions of such statute as soon thereafter as practicable.

[fol. 243] 61. Defendant in addition to the above general exception excepts to so much of the Master's opinion on pages 29 through 38 thereof, which purports to calculate the cost of the properties of the plaintiff company, on the ground that the figures therein contained are excessive and unreasonable, are contrary to the evidence, unsupported by the evidence, and against the weight thereof. The Master should have found, as testified by an officer of the plaintiff before the Stevens Investigating Committee in 1905, that many millions in the figures appearing in the opening entries in plaintiff's books represented arbitrary valuations of franchises, going value, good will, and other intangibles, and other fictitious items, supposed to be transferred by the vendor companies to the plaintiff and that the actual original cost of the physical properties transferred to the plaintiff company in 1895 was not in excess of $15,000,000.

62. Defendant in addition to the above general exception excepts to so much of the Master's opinion appearing on pages 44 and 45, as reads as follows:

"Upon cross-examination, there was a suggestion in the form of questions propounded to the witness to the effect that while Mr. Burt's valuation was as of June 1st, 1923, the plaintiff had, as matter of fact, between June 1 and December 31, 1923, spent approximately $7,000 in repairs upon the buildings 1116 and 1124 Fulton Street (page [fol. 244] 2170), and substantially a like amount upon repairs to the building 176 Remsen Street (page 2172), although the witness had testified that the latter building required an expenditure of only $380. (Plaintiff's Exhibit 172.) Whether or not such expenditures as were thus suggested by the questions were as matter of fact incurred by the plaintiff, does not specifically appear, except from an examination of plaintiff's books of account in evidence. These books do not sustain the suggestion embodied in the questions, although they indicate that repairs were made subsequent to June 1st, 1923,"

on the ground that the statement "whether or not such expenditures as were thus suggested by the questions were as matter of fact incurred by the plaintiff, does not specifically appear, except from an examination of plaintiff's books of account in evidence. These books do not sustain the suggestion embodied in the questions," as directly contrary to the facts and the evidence, said books and records, showing specifically that such repairs were made.

63. Defendant in addition to the above general exception excepts to that part of the Master's opinion on pages 51 through 54 thereof, which holds that there should be no deduction from the reproduction cost or fair value of plaintiff's services, on account of the large proportion of such services actually paid for by the consumers of the plaintiff company and its predecessors, on the ground that said conclusion of law is contrary to the fundamental principles of law and equity.

64. Defendant in addition to the above general exception excepts to that part of the Master's opinion appearing on [fols. 245-247] pages 78 through 80 under the title "Con-

tingency Account" on the ground that the conclusions therein stated are contrary to the settled principles of law and equity.

65. Defendant in addition to the above general exception excepts to that part of the Master's opinion appearing on pages 84 through 89 under the title "Construction of Statute" on the ground that the conclusions therein stated place a construction on the said statute which is erroneous and contrary to settled principles of law and equity. The Master should have found that the two provisions of the statute, as to price and quality, were and are separable and that if the provision requiring the furnishing of 650 British Thermal Unit gas was found unconstitutional, the dollar rate provision nevertheless survived and the plaintiff company thereupon became obligated to furnish gas of a British Thermal standard, as required by Order 108 of the Public Service Commission, made and filed August 30, 1922.

Albert Ottinger, Attorney-General of the State of New York. Office & P. O. address: 49 Chambers Street, New York City, N. Y. John Holley Clark, Jr., Solicitor for Defendant Ottinger. Office & P. O. Address: 49 Chambers St., New York City, N. Y. Charles E. Buchner, Special Deputy Attorney-General.

Dated, New York, April 10th, 1925.

[fol. 248] IN UNITED STATES DISTRICT COURT

[Title omitted]

NOTICE OF FILING DEFENDANTS' EXCEPTIONS

Please take notice that the within exceptions of the defendants, William A. Prendergast, et al., constituting the Public Service Commission of the State of New York, to the report of the Special Master herein, were filed this day in the office of the Clerk of the United States District Court for the Eastern District of New York.

Charles G. Blakeslee, Solicitor for Defendants, William A. Prendergast et al., #30 Church Street, New York City.

Dated New York, April 10, 1925.

[fol. 249] To Messrs. Cullen & Dykman, Solicitors for Plaintiff, 177 Montague Street, Borough of Brooklyn, City of New York. Albert Ottinger, Esq., Attorney General, State of New York. John Holley Clark, Jr., Solicitor for Attorney-General, 51 Chambers Street, Borough of Manhattan, City of New York.

[fol. 250] In United States District Court

[Title omitted]

Exceptions of the Defendants, William A. Prendergast, William R. Pooley, Charles Van Voorhis, Oliver C. Semple, and George R. Van Namee, Constituting the Public Service Commission of the State of New York, to Report of the Special Master—Filed March 21, 1925

Now come the defendants William A. Prendergast, William R. Pooley, Charles Van Voorhis, Oliver C. Semple and George R. Van Namee, constituting the Public Service Commission of the State of New York, and except to the findings of fact and conclusions of law contained in the report filed herein by Almet Reed Latson, Esq., Special Master, on March 21, 1925, in the following particulars, to wit:

[fol. 251] First. The defendants except to that part of Finding No. 31 herein, in which the Master finds that—

"The actual original cost of construction of property acquired by plaintiff on November 4th, 1925, cannot be established,"

upon the ground that such finding is a speculative conclusion, is not supported by the evidence and is against the weight thereof. They further except to that part of said Finding No. 31 which purports to find (1) two methods, as set forth in paragraphs marked (a) and (b) in said finding, for estimating the original cost of plaintiff's property and (2), pursuant to such methods, certain amounts alleged to indicate "a valuation" or "an original cost" or "what the property ought to have cost," upon the ground that both methods followed are improper, are based on an unsound theory and are not supported by the evidence, and that the

amounts above referred to are excessive and unreasonable, are not supported by the evidence and are against the weight thereof. They further except to that part of Finding No. 31, which states that—

"Defendants offered no evidence on this subject, except that the books of account of the vendor corporations were put in evidence by the defendants,"

upon the ground that said finding is not supported by the evidence and is against the weight thereof.

Second. The defendants except to Finding No. 40 herein in so far as the Master purports to find that the capital stock, mortgage and debenture bonds, issued by the plaintiff at the time it acquired the properties of the vendor corporations, were issued in consideration of money, satisfaction of antecedent indebtedness, and property in amount [fol. 252] and value equal to the par value of said stock and the face value of said bonds, and that such was the opinion of the plaintiff's board of directors at that time is indicated by the minutes of the meetings of the several boards of directors, upon the ground that the same is not supported by the evidence, is contrary to the evidence and is against the weight thereof.

Third. The defendants except to that part of Finding No. 42 herein, in which the Master finds that an inventory of the properties purchased from the vendor corporations "cannot now be established," upon the ground that said finding is a speculative conclusion, is not supported by the evidence and is against the weight thereof.

Fourth. The defendants except to that part of Finding No. 45 herein, in which the Master finds that—

"Each of the properties described in this finding and the structures and equipments thereon are necessary to plaintiff and used and useful in the public service, and the defendants offered no evidence to the contrary,"

upon the ground that said finding is not supported by the evidence; and the defendants except to so much of said finding which states that "the defendants offered no evidence to the contrary," upon the further ground that said finding is immaterial.

Fifth. The defendants except to that part of Finding No. 46 herein, in which the Master finds that—

"Each of the above described properties is necessary to plaintiff and used and useful in the public service, and defendants offered no evidence to the contrary,"

upon the same grounds stated in exception Fourth to Finding No. 45 herein.

[fol. 253] Sixth. The defendants except to Finding No. 69 herein, upon the ground that said finding is immaterial; and they further except to that part of said finding which states that—

"Defendants upon the trial introduced no evidence whatever upon the existence, use or usefulness of any item or quantity shown in such inventory or any unit prices applied therein,"

upon the ground that it is not supported by the evidence.

Seventh. The defendants except to that part of Finding No. 71 herein, in which the Master finds that all of the parcels of land described therein, "are necessary to the plaintiff and used and useful in the public service, and defendants offered no evidence to the contrary," upon the ground that the same is not supported by the evidence; and the defendants except to so much of said finding which states that "defendants offered no evidence to the contrary," upon the further ground that same is immaterial.

Eighth. The defendants except to Finding No. 75 in so far as the Master purports to find that the plaintiff's physical property has suffered no loss in value by reason of depreciation, on the ground that said finding is not supported by the evidence, is contrary to reason and to common sense and to well established principles of law.

Ninth. The defendants except to Finding No. 76 herein in so far as the Master finds that the loss in value in plaintiff's building and structures is limited to $20,756.

Tenth. The defendants except to Finding No. 77 herein in so far as the Master finds that the loss in value in plaintiff's gas manufacturing plants, stations and gas holders is limited to $528,368.40.

[fol. 254] Eleventh. The defendants except to Finding No. 78 herein, upon the ground that same is not supported by the evidence.

Twelfth. The defendants except to Finding No. 79 herein, upon the grounds that same is not supported by the evidence.

Thirteenth. The defendants except to Finding No. 88 herein insofar as the Master purports to find that there should be or has been included in the rate base the estimated cost to restore at June 1, 1923 prices pavements installed prior to the installation of mains and services in the instant case, upon the ground that such a finding is not supported by the evidence and is contrary to well established principles of law.

Fourteenth. The defendants except to Finding No. 97 herein, upon the ground that it is not supported by the evidence.

Fifteenth. The defendants except to that portion of Finding No. 107 herein, in which the Master finds that—

"The average working capital of plaintiff during the year 1923 was actually $10,184,975.63. A fair and reasonable amount of working capital for plaintiff exclusive of such working capital as is required to manufacture and supply gas to the so-called subsidiary companies is the sum of $5,000,000,"

upon the ground that said amounts are unreasonable and excessive and are not supported by the evidence.

Sixteenth. The defendants except to Finding No. 108 herein, in which the Master finds that the cost to reproduce the manufacturing plants, distribution system and other property of plaintiff, used and useful in the public services as of June 1, 1923, at the prices of labor and material then prevailing, and after deducting the portion thereof devoted to the use of the subsidiary companies, was and is at least [fol. 255] the sum of $62,851,910, upon the ground that said amount and the various figures and estimates set forth in said finding are excessive, unreasonable and improper and that said finding is based upon an illegal theory of valua-

tion, makes practically no deduction for depreciation, includes in such valuation property not necessary or not used or useful in the public services, and is not supported by the evidence.

Seventeenth. The defendants except to that part of Finding No. 109 herein, in which the Master finds that—

"The present fair value of plaintiffs' property inventoried and proved to be used and useful as of June 1, 1923, is $55,000,000, exclusive of the property devoted to the use of the subsidiary companies,"

and that the—

"Plaintiff was and is entitled to earn a fair return upon the amount of $58,092,513 so found as the value of the plaintiffs' property used and useful in the public service on December 31, 1923,"

upon the ground that said amounts are excessive, unreasonable and improper and that said finding is based chiefly upon reproduction cost, new, at present day prices and practically without any deduction for depreciation and in all such respects is unfair, improper and illegal and based upon an illegal theory of valuation, and is not supported by the evidence and is not in accordance with the established principles of law involved.

The defendants further except to that part of said Finding No. 109 which states that the 'defendants offered no evidence to the contrary" upon the ground that said finding is not supported by the evidence and furthermore is immaterial.

[fol. 256] Eighteenth. The defendants except to that part of Finding No. 110 herein, in which the Master finds that "Going concern value exists in the instant case. I fix that value at $6,000,000," upon the ground that such finding is improper and illegal, and there is no evidence to support it and is contrary to the established principles of law involved.

The defendants further except to that part of said Finding No. 110 herein, in which the Master holds that "the statute is clearly confiscatory," upon the ground that it is

not supported by the evidence and is contrary to the established principles of law involved.

Nineteenth. The defendants except to that part of Finding No. 111 herein, in which the Master finds that "Plaintiff ought reasonably to have a reserve manufacturing plant capacity equal to 25% of its rated capacity," upon the ground that such a reserve capacity is excessive and is not supported by the evidence.

Twentieth. The defendants except to Finding No. 154 herein, upon the ground that the allowance made by the Master for unaccounted-for gas was excessive and is not supported by the evidence.

Twenty-First. The defendants except to that part of Finding No. 155 herein, in which the Master finds that—

"There is no evidence in this record showing or tending to show that the prices of material or the wages paid for labor on the whole will be reduced from the wages and prices now being paid by the plaintiff,"

upon the ground that said finding is not supported by the evidence and is speculative and an unnecessary prophecy.

Twenty-Second. The defendants except to Findings No. 172, 173, 174, 175 and 184 herein, purporting to show the reasonable and necessary operating expenses of plaintiff [fol. 257] for 1922, upon the ground that same are not supported by the evidence and are contrary to established principles of law involved.

Twenty-third. The defendants except to Findings No. 177, 178, 179, 180 and 185 herein purporting to show the reasonable and necessary operating expenses of plaintiff for 1923, upon the ground that same are not supported by the evidence and are contrary to established principles of law involved.

Twenty-fourth. The defendants except to Findings Nos. 187 and 188 herein, upon the ground that the figures stated therein and purporting to represent the plaintiff's operating expenses for 1922 and 1923 respectively, are excessive and are not supported by the evidence.

Twenty-fifth. The defendants except to Findings Nos. 189 and 190 herein, upon the ground that the Master, in making his computations, used improper and excessive figures for the plaintiff's operating expenses and improper and excessive amounts for the "fair value" and "book cost" of plaintiff's property, which figures and amounts are not supported by the evidence and are contrary to the established principles of law involved.

Twenty-sixth. The defendants except to Finding No. 191 herein, upon the ground that the Master, in making his computations, used improper and excessive figures for the plaintiff's operating expenses and improper and excessive amounts for the "fair value" of the plaintiff's property, which figures and amounts are not supported by the evidence and are contrary to the established principles of law involved.

Twenty-seventh. The defendants except to Finding No. 192 herein, upon the ground that same is not supported by [fols. 258 & 259] the evidence, and is contrary to the established principles of law involved.

Twenty-eighth. The defendants except to Finding No. 193 herein, upon the ground that said finding is not supported by the evidence and is contrary to established principles of law involved.

New York, April 9, 1925.

Charles G. Blakeslee, Solicitor for Defendants, Wm. A. Prendergast et al. Edward M. Deegan, Melvin L. Krulewitch, of Counsel.

[fol. 260] In United States District Court

[Title omitted]

Opinion—June 24, 1925

Cullen & Dykman, attorneys for plaintiff: William N. Dykman and Jackson A. Dykman, of counsel.

Charles G. Blakeslee, attorney for defendants, William A. Prendergast, et al., constituting the Public Service

Commission: Edward M. Deegan and Melvin L. Krulewitch, of counsel.

John Holley Clark, Jr., attorney for defendant Albert Ottinger, as Attorney General of the State of New York: William Hayward, John Holley Clark, Jr., and Charles E. Buehner, of counsel.

CAMPBELL, D. J.:

[fol. 261] This is an action in equity the object of which is to have declared unconstitutional as confiscatory and void Chapter 899 of the Laws of 1923 of the State of New York, which prescribes a maximum rate, in cities containing a population of one million or over, of one dollar per one thousand cubic feet of gas of a standard of not less than six hundred and fifty British thermal units per cubic foot, and for an injunction restraining the defendants from enforcing or attempting to enforce the provisions of said Act.

New York City is the only city of the State which contains a population of over one million.

This case comes before the Court on the motion of the plaintiff for an order sustaining the plaintiff's exceptions to the Special Master's Report filed herein, and confirming the said report in all other respects, and for a final decree.

The motion came on to be heard on the 15th day of April, 1923, and was at the request of the attorney for the Attorney General of the State of New York adjourned to May 5, 1925, when it was argued and all briefs finally submitted.

I agree with all the counsel in this case that the provisions of the Act of February 13, 1925, amending Section [fol. 262] 238 of the Judicial Code, which went into effect May 13, 1925, do not apply inasmuch as the case was finally submitted before a court consisting of three judges could be called, and that having been finally submitted before such statute went into effect, this court has power to determine this motion and enter a decree.

A preliminary injunction was granted to the plaintiff herein on July 2, 1923, by the Statutory Court in this District composed of Circuit Judge Mayer and District Judges Garvin and Campbell, which enjoined the enforcement of the Statute, Chapter 899, supra, upon the condition, among

others, that the plaintiff, pending final decree or until the further order of the court, continue to furnish gas at the rates theretofore fixed and of the thermal content theretofore prescribed by the Public Service Commission as a basis for said rates.

By an order dated October 11, 1923, granted by me, the matter was referred to Almet Reed Latson, Esq., as Special Master, which order directed him to hear the evidence, make all computations, find the facts and report with recommendations.

The hearing commenced promptly after the Master's appointment and proceeded with due diligence.

[fol. 263] The Special Master has fully complied with that order and filed a report which contains a careful and thorough recital of the questions of law and fact and his findings, together with a well considered opinion, in which report he recommends the entry of a final decree in favor of the plaintiff.

Plaintiff and defendants have filed numerous exceptions to portions of the Master's report.

Chapter 899 of the Laws of 1923 of the Laws of the State of New York entitled "An Act to Amend the Public Service Commission Law in Relation to the Charge for Illuminating Gas in Cities Containing a Population of One Million or Over" became effective on June 2, 1923, and amended the existing statute by adding a new section as follows:

"Sec. 67-a. Charge for Gas in Cities of One Million or More.—A gas corporation engaged in the business of manufacturing, furnishing or selling illuminating gas in a city containing a population of one million or over shall not charge or receive for gas furnished or sold in such city a sum per one thousand cubic feet in excess of one dollar, nor furnish in such city gas of a standard less than six hundred and fifty British thermal units per cubic foot, measured under normal conditions of temperature and atmospheric pressure. The public service commission, notwithstanding any other provision of this chapter, shall not allow a rate or charge in the case of such cities in excess of such sum."

[fol. 264] Plaintiff contends that the said Act is unconstitutional on two grounds:

1. That is impairs the obligation of a valid subsisting contract, in violation of the provisions of Section 10 of Article 1 of the Federal Constitution.

2. That it is confiscatory and deprives the plaintiff of its property without due process of law, in violation of Section 1 of Article 14 of the Federal Constitution.

I will consider these contentions in that order.

After the former Eighty Cent Law had been declared unconstitutional, the Public Service Commission instituted two proceedings which resulted in two orders dated August 30, 1922, one of which fixed a maximum rate of $1.15 per thousand cubic feet of gas to be charged by the plaintiff and its subsidiary companies, and provided that this rate should remain in operation for one year from October 1, 1922; the other order which became effective October 1, 1922, changed the standard of gas to be furnished by the plaintiff and its subsidiary companies from twenty-two candle power to a minimum of five hundred and thirty-seven British thermal units.

[fol. 265] The plaintiff proceeded to comply with these orders and during the year 1923 expended $108,668.23 in making adjustments of consumers' appliances and those in process of manufacture, in order to make it safe to burn gas of the standard so fixed instead of twenty two candle power gas as prescribed by the former statute.

The Act complained of became effective on June 2, 1923, while these orders were still in force.

Plaintiff cites in support of its contention New York and Queens Gas Co., v. Prendergast, 1 Fed. (2nd) 351, decided by Judge Winslow in the United States District Court for the Southern District of New York.

The Act complained of applies to all the gas companies of the City of New York, and I realize how important it is not to have any conflict in the decisions of the courts in adjoining Districts of the same Circuit, on any question whenever it can be avoided, but the Special Master in this case has reported adversely to this contention of the plaintiff, and in his opinion has set forth his reasons for such report with a citation of authorities.

The question is one of the utmost importance because if plaintiff's contention should be sustained, further consid-
[fol. 266] eration of the many other questions presented might not be necessary.

A consideration of the authorities shows that the power of the legislature to authorize the making of a contract as to rates is limited.

The regulation of rates to be charged by a public utility is an exercise of the police powers of the State, (Munn v. Illinois, 94 U. S. 113); and contracts cannot be made which in any way impair or limit this power, nor can one legislature limit or control a subsequent one in its exercise (B. E. S. R. R. Co. v. B. S. R. R. Co., 111 N. Y. 132; Manigault v. Springs, 199 U. S. 473). Contracts must be understood as made in reference to the possible exercise of the rightful authority of the Government and no obligation of the contract can extend to defeat the legitimate government authority (Union Dry Goods Company v. Georgia Public Service Corporation, 248 U. S. 372).

It has likewise been held that the legislature for the public welfare may modify regulations regarding rates which municipalities may impose in granting licenses or permission to use its streets by public service corporations without impairing the obligation of a contract within the
[fol. 267] provisions of the Constitution (People ex rel. Village of S. Glen Falls v. P. S. Comm., 225 N. Y. 216).

It has also been held that neither the "contract clause" nor the "due process clause" of the Federal Constitution has the effect of overriding the power of the State to establish all the regulations reasonably necessary to secure the health, safety, or general welfare of the community (Atlantic Coast Line v. Goldsboro, 232 U. S. 548).

As thus limited the legislature had authority to empower the Public Service Commission to contract on behalf of the State.

The authority of the Public Service Commission to contract on behalf of the State must be found in some express grant as such authority will not be implied (Milwaukee Elec. Ry. v. Wisconsin R. R. Comm., 238 U. S. 174; Home Telephone Co. v. Los Angeles, 211 U. S. 265).

The Public Service Commission Law of New York State Laws of 1910, Chapter 480, created a commission, and by

general provisions fixed its jurisdiction, power and procedure.

Section 22 of the Law, among other things, provided:

[fol. 268] "After an order has been made by a commission any corporation or person interested therein shall have the right to apply for a rehearing in respect to any matter determined therein, and the commission shall grant and hold such a rehearing if in its judgment sufficient reason therefor be made to appear. * * * If, after such rehearing and a consideration of the facts, including those arising since the making of the order, the commission shall be of opinion that the original order or any part thereof is in any respect unjust or unwarranted, or should be changed the commission may abrogate or change the same. * * *"

Section 65 of that law provides:

"* * * All charges made or demanded by any such gas corporation, * * * for gas * * * shall be just and reasonable and not more than allowed by law or by order of the commission having jurisdiction. * * *"

Section 66 of the law, among other things, provided:

"The commission shall * * *

"3. Have power by order to fix and change from time to time standards of the purity, illuminating power and heating power, and standards for the measurement thereof * * *" of gas to be manufactured, distributed or sold.

Section 72 of that law, among other things, provided:

"* * * After a hearing and after such an investigation as shall have been made by the commission * * * the commission may by order fix just and reasonable prices, rates and charges for gas * * * to be charged by such corporation or person, for the service to be furnished notwithstanding that a higher or lower prices has been heretofore prescribed by a general or special statute, contract, [fol. 269] grant franchise, condition, consent or other agreement. * * * The price fixed by the commission under this section or under subdivision five of section sixty-six shall be the maximum price to be charged by such * * * corporation * * * for * * * for the service to be

furnished within the territory and for a period to be fixed by the commission in the order, not exceeding three years except in the case of a sliding scale, and thereafter until the commission shall, upon its own motion or upon the complaint of any corporation, person or municipality interested, fix a higher or lower maximum price of gas * * * to be thereafter charged. * * *"

The Public Service Commission Law must be considered as a whole and from it we find that the Commission was empowered to fix the standard of purity from time to time, and to fix the maximum rates by order for a term not exceeding three years, but the Act also empowered the commission to change or abrogate both clauses of orders upon a rehearing.

The commission could not have greater power than the legislature from which it received its power, and had the rate been fixed by an act of the legislature, it could have been modified or repealed by the same or a succeeding legislature (Village of Saratoga Springs v. Saratoga Gas Etc. Co., 191 N. Y. 123); in which case the situation created by an order fixing the price of gas for a stated period of time [fol. 270] was described as a "period of repose", and in which a prior statute was under consideration and held unconstitutional on other grounds, but contained the three years' provision, Chief Justice Cullen, writing for the court, said, at page 149:

"We have no difficulty in upholding the provision that the rate shall remain as established for the term of three years."

And at page 150 said:

"The learned court below said that the company would be in no worse condition than if the legislature had itself fixed rates for in such case the rates would be permanent until the statute enacting them had been modified or repealed. This is doubtless true; but statutory rates would operate equally on both parties."

The evidence shows that the plaintiff after such orders were made by the commission and relying on them made substantial expenditures in adjusting appliances to meet the conditions created by the change in the standard; but

even under the statute which gave the commissions the power to fix standards, the commission was given power to change them from time to time and not to establish them for any definite time; and as has already been shown, the order fixing the price of gas for one year was subject to change or abrogation by the commission and to repeal by the legislature.

In any event the plaintiff by the making of such expenditure could not prevent or postpone the exertion by the State [fol. 271] of the power to regulate the rate to be charged. (Producers Transp. Co. v. R. R. Comm., 251 U. S. 228).

The contract, if there be one, must be found in the orders and the acceptance.

The acceptance is provided for in Section 23 of the Public Service Commission Law, but its sole purpose is to indicate whether the corporation will comply with or contest the order in the courts.

A contract binding the succeeding legislature cannot arise as the result of the acceptance of the order where the commission was without power to make such contract. Whatever may be the construction placed upon Section 72 of the Public Service Commission Law, supra, the commission clearly had no power to fix the standard for any definite period of time; therefore, if there was a contract it must be found in the order of the commission fixing the rate, dated August 30, 1922, the parts of which material to this issue read as follows:

"That this order shall take effect October 1, 1922, and shall continue in force until September 30, 1923, and thereafter until the Commission shall otherwise order."

And the following paragraph:

"Further Ordered that this order shall be without prej- [fol. 272] udice to the right of any interested party to apply to the Commission for a continuance of the hearings in these proceedings for the purpose of presenting the evidence relating to the subject matter of this order."

The plaintiff notified the commission "that the said order of August 30, 1922, and the terms and conditions thereof are accepted and will be obeyed," but qualified the acceptance as follows:

"This acceptance and statement of readiness to obey the said order dated August 30, 1922, is not intended as a concession by the Brooklyn Union Gas Company that the rates therein prescribed are adequate or reasonable or that such rates and classifications of service will yield a proper return upon the value of the property, used and useful, in its business. Such acceptance and statement of readiness to obey is not intended as a waiver of any right at any time in the future to claim a return upon the value of its property at the time or any other right which it may have with reference to the rates, past, present or future."

It thus appears that neither the commission nor the plaintiff agreed without reservation that the rates should continue for a definite time, but each reserved the right to recede from the provisions of the order.

In my opinion Mobile Gas Co. v. Patterson, 293 Fed. 208, the authority cited in New York and Queens Gas Co. v. Prendergast, supra, seems to me to be clearly distinguishable. In that case the State of Alabama had provided that [fol. 273] the value of the property of a public utility corporation should, on its application and payment of expenses, be determined by the Alabama Public Service Commission, and that the value so fixed should constitute the permanent basis valuation of the property as of the date of the valuation for all future rate making purposes.

By that method a fact, the value of the property as of a certain date, was established for future rate making purposes, and the Court held that by the acceptance of the State's offer by the public utility corporation, and the payment by it of the expenses, a contract had been consum-ated.

By the contract there sustained, no attempt was made to fix a rate or to contract away the exercise of the police power of the State, while in the case at bar plaintiff seeks to establish a contract which would fix a rate and prevent the State from exercising its police power for the term of one year from October 1, 1922.

I therefore hold that the statute in question does not violate Section 10 of Article 1 of the Constitution.

This brings *is* to a consideration of the question whether the Act should be declared unconstitutional on the ground [fol. 274] that it is confiscatory.

Plaintiff contends that there is no presumption in favor of the validity of the statute and cites in support of its contention what was said by Circuit Judge Mayer, of the Statutory Court, on the application for an interlocutory injunction.

I do not understand, however, that the statutory court denied the presumption of validity to the Act complained of, but on that application where the decision was necessarily made on affidavits, the weight of evidence necessary to overcome that presumption, and warrant granting a preliminary injunction, was of course a matter for consideration, and to determine that question attention could be given to the fact that there was no showing of any investigation of the subject by the legislature before the passage of the Act, and to the further fact that the Public Service Commission had within ten months prior to that time concluded an investigation and fixed a higher rate, viz., $1.15 per thousand cubic feet, for a period which would not have expired for about four months after the date on which the Statute was enacted, and had established a lower standard of 537 B. T. U.

Of course it may well be said, why have a Public Serv- [fol. 275] ice Commission to fix rates and standards, and then override their determinations based on expert investigation? But that is not a question for this Court to decide.

The legislature alone was charged with the duty of determining the policy of the State, and its action cannot be reviewed if the enactment was constitutional, therefore it seems to me that on this hearing the law is well settled, that the legislature is presumed to have acted within its power in enacting a particular statute, and that in the absence of unequivocal and convincing evidence, the act of the legislature in fixing rates will be presumed to be valid and fair (Chicago, Milwaukee and St. Paul Railway v. Tompkins, 176 U. S. 167, Ex Parte Young, 209 U. S. 123, Des Moines Gas Co. v. Des Moines, 238 U. S. 153) and the burden is cast upon the plaintiff to prove the unconstitutionality of the act beyond a reasonable doubt (Fletcher v. Peck, 6 Cranch, 87, Ogden v. Saunders, 12 Wheat. 212, Phœnix Ry. v. Geary, 239 U. S. 277).

Plaintiff has not attempted to comply with the statute but is operating under an injunction issued out of this court and furnishing gas at the rate and of the standard prescribed in the orders of the Public Service Commission which were [fol. 276] in force at the time the said Act became effective.

The defendants contend that the Act should not be declared confiscatory until the plaintiff has experimented with the statutory rate, and cite Louisiana Railroad Commission v. Cumberland Telephone Co., 212 U. S. 414, City of Knoxville v. Knoxville Water Co., 212 U. S. 1, and other cases.

There is, however, a well recognized exception to that rule laid down by the United States Supreme Court in Willcox v. Consolidated Gas Co., 212 U. S. 19, where on a challenge of the constitutionality of Chapter 125 of the Laws of 1906, the Court denied the relief sought, without prejudice to the institution of a new action should the result of experience indicate necessity therefor. The Court said, at page 42:

"Of course, there may be cases where the rate is so low, upon any reasonable basis of valuation, that there can be no just doubt as to its confiscatory nature, and in that event there should be no hesitation in so deciding and in enjoining its enforcement without waiting for the damage which must inevitably accompany the operation of the business under the objectionable rate."

And in Knoxville v. Knoxville Water Co., supra, cited by the defendants, in which at page 17, Mr. Justice Moody, writing for the court said:

[fol. 277] "It cannot be doubted that in a clear case of confiscation it is the right and duty of the court to annul the law."

Plaintiff contends that it has brought itself within the exception.

On June 2, 1923, when the statute in question went into effect, the plaintiff was furnishing gas of 587 B. T. U., and evidence has been produced to show the actual cost of furnishing that gas, and the estimated cost of furnishing gas of 537 B. T. U., the standard fixed by the Commission, and of 650 B. T. U., the standard prescribed by the legis-

lature; and that at one dollar for one thousand cubic feet, the prescribed rate for gas of any of those standards, the return would be insufficient.

Plaintiff contends that such figures are the result of experience.

The statute in question not only provided the rate to be charged but also fixed the standard of gas to be furnished at 650 B. T. U., the cost of manufacturing which, evidence was produced to show, would be greatly increased.

All the parties apparently tried the case before the Master, so far as the taking of testimony was concerned, upon the theory that both provisions as to price and standard [fol. 278] took effect immediately, whatever change there may have been in their attitude in argument after all the testimony was taken.

Evidence was also produced showing that a readjustment of the appliances used by the consumers could not be effected at once, and that to furnish gas of 650 B. T. U. without first readjusting the appliances of the consumers to utilize the same would endanger the health, if not the life, of the community.

Reluctant as any court should be to declare a statute of this character confiscatory until it has been demonstrated so to be during a test period, I am of the opinion that plaintiff in the action at bar has brought itself within the exception to the general rule which is laid down in Willcox v. Consolidated Gas Co., supra.

Further consideration will be given to the construction of the statute, after consideration of the evidence which it is alleged tends to show its confiscatory nature.

The Master has so thoroughly examined and reported as to the facts that I shall content myself with stating only such facts as may be necessary in the determination of the [fol. 279] questions raised by the exceptions.

Prior to and at the time of the incorporation of the plaintiff in September, 1895, under the Transportation Corporations Law of the State of New York, for the purpose of manufacturing and supplying gas in what is now the Borough of Brooklyn, New York City, there were in the portion of that territory known as the City of Brooklyn, seven corporations engaged in serving gas, to wit: The Nassau Gas Light Company, The Peoples Gas Light Com-

pany, The Metropolitan Gas Light Company, The Williamsburg Gas Light Company, The Brooklyn Gas Light Company, The Fulton Municipal Gas Company, and The Citizens Gas Company. These companies were in active competition, in some instances invading each other's territory, two, three and even four mains existing in some streets, and engaged in a rate war.

Apparently the plaintiff corporation was organized for the express purpose of acquiring the properties of these corporations, and the purpose was consummated on November 4, 1895, by the simple process of the plaintiff purchasing the assets of the several corporations for which it paid in stocks and bonds of the plaintiff.

The purchase price paid to the several corporations was [fol. 280] the result of negotiations after investigation by committees of the various companies' reports to their boards of directors, and resolutions of such boards regularly adopted.

The plaintiff took possession of all the assets, tangible and intangible, of said vendor corporations, except the stocks and bonds forming the purchase price, which they had distributed to their stockholders, and thereafter the plaintiff served the community with gas and continues so to do.

The plaintiff contends that the franchises possessed by the said vendor corporations, which were acquired by it and entered on its books on November 4, 1895, as capital assets, at a valuation of $3,050,000, should be included among the other assets of the plaintiff used and useful in its business, and that the fair value of the same should be included in arriving at a rate base for the purpose of this action.

The Master reported adversely to this contention and the plaintiff excepted.

It may be conceded, as urged by the plaintiff, that these franchises constituted property which would survive the dissolution of the corporation possessing the same (People v. O'Brien, 111 N. Y. 1), and that they were property the [fol. 281] acquisition of which would support the issue of capital stock (Rafferty v. Buffalo City Gas Co., 37 App. Div. 618), and that they were property which might be the subject matter of a special franchise tax under the Tax

Law of the State of New York (People ex rel. Metropolitan Street Railway Co. v. State Tax Commission, 199 U. S. 1); yet the fact remains that nothing was paid by any of the vendor companies for such franchises to the franchise-granting power, and therefore no valuation on the same can be included in the rate base. (Spring Valley Water Works Co. v. City of San Francisco, 192 Fed. 137; Cumberland T. & T. Co. v. City of Louisville, 187 Fed. 637; Cedar Rapids Gas Light Co. v. Cedar Rapids, 223 U. S. 655, at page 669).

The test in the action at bar is not what plaintiff paid for them, nor what may be their present value, but what did the vendor companies pay for them.

I can find no authority supporting plaintiff's contention.

I cannot agree with plaintiff that Willcox v. Consolidated Gas Co., 212 U. S. 19, can be considered as authority for the inclusion of the value of said franchises in the rate base in the action at bar.

In that case Chapter 367 of the Laws of the State of New [fol. 282] York of 1884, passed after the incorporation of the Consolidated Gas Company, which authorized corporations engaged in manufacturing to consolidate and permitted the issuance of capital stock by the consolidated corporation not "larger in amount than the fair, aggregate value of the property, franchises and rights of the several companies thus to be consolidated," was in force.

That statute further prescribed a means of ascertaining the fair aggregate value of those properties, franchises and rights, viz., through the action of the directors of the various companies, supplemented by the approval of the stockholders in each instance. The Consolidated Gas Company of New York availed itself of this statute and six gas companies in the City of New York were consolidated into the Consolidated Gas Company of New York, and the franchises and rights of the constituent companies were by the method prescribed by the statute valued at $7,781,000, and capital stock of the Consolidated corporation was issued accordingly.

In 1885 the capitalization of the corporation was investigated by a committee of the legislature of the State of New York appointed for that purpose, which concluded that

"this state of facts cannot be called a violation of the law [fol. 283] that expressly authorized it to be done."

The Supreme Court of the United States in that case accepted the valuation of the franchises fixed and agreed upon under the Act of 1884 as conclusive at that time, because the agreement regarding it has been always recognized as valid, and the stock had been largely dealt in for more than twenty years before that time on the basis of the validity of the valuation and of the stock issued by the company; and the Court made it clear in its opinion that the decision was founded upon the peculiar facts of that case and is not to be regarded as a precedent in cases involving the valuation of franchises generally.

That the decision of the Supreme Court in that case was limited to the peculiar facts therein shown and not intended to change the rule seems to have been generally accepted (Lincoln Gas & Electric Light Co. v. City of Lincoln, 182 Fed. 926; Bronx Gas & Electric Co. v. Public Service Commission, 190 A. D. 13).

That it was not intended by the decision in that case to invade or modify the general rule further appears by the decision of the Supreme Court itself in Georgia Railway & [fol. 284] Power Co. v. Railroad Commission of the State of Georgia, 262 U. S. 625, at page 632.

Chapter 367 of the Laws of 1884, referred to by the Supreme Court, was repealed by Chapters 563 and 567 of the Laws of 1890 before the plaintiff in the case at bar was incorporated, and therefore plaintiff can claim no right under that statute.

At the time the plaintiff acquired the assets of the seven corporations in November 1895, there were three different methods which it could have pursued, the procedure prescribed and the rights given being different in each statute.

Section 13 of Chapter 567, Laws of 1890 (Business Corporation Law), authorized a consolidation under which a new corporation would have entirely supplanted the consolidated corporations, and that this was not done is shown by the decrees of dissolution of the vendor corporations granted in actions brought by the Attorney General of the State of New York for that purpose in the following year.

Section 40 of Chapter 564, Laws of 1890, (Stock Corporation Law), authorized a merger under which there would

have been the survival of one and the obliteration of the others. (Irvine v. New York Edison Co., 207 N. Y. 425). [fol. 285] This likewise was not accomplished.

Section 33 of Chapter 564, Laws of 1890 (Stock Corporation Law), authorized a simple purchase, and this was the method pursued by the plaintiff which acquired by conveyance the property, franchises and rights of seven other corporations, all eight corporations remaining in existence. No method of procuring a valuation upon the franchises conveyed was provided in the statute, nor did it authorize the issue of capital stock in the manner provided in Chapter 367 of the Laws of 1884.

In only two particulars can I find any analogy between the facts in the instant case and that of the Consolidated Gas Company as to franchises, and those are that in neither were special stocks issued for the franchises, and in both the stock issued had been largely dealt in for more than twenty years past; and these are not sufficient to bring the case at bar under the exceptions to the rule laid down in the Consolidated Gas Company case.

I therefore sustain the Master and hold that the value of the franchises cannot be included in the case at bar in making up the rate base of the plaintiff.

It is not the province of this Court to prescribe rates, the question with which we are concerned is to determine [fol. 286] whether the rates prescribed by the legislature are confiscatory.

The rule to be followed in the case at bar is to ascertain the fair value of the property used and useful by the plaintiff in serving the public, as it is upon that fair value that the plaintiff is entitled to a fair return.

That fair value cannot be determined by considering only the costs of replacement less depreciation, but we must also consider, if they can be ascertained, the original cost of construction, the amount expended in permanent improvements, the amount and market value of its bonds and stock, the present as compared with the original cost of construction, the probably earning capacity of the property under the particular rates prescribed by the statute, and the sum required to meet operating expenses, together with such other relevant facts as may be available, giving such weight as may be just and right in each case. (Smyth

v. Ames, 169 U. S. 546, The Minnesota Rate Cases, 230 U. S. 434, San Diego Land Co. v. National City, 174 U. S. 757, Willcox v. Consolidated Gas Co., 212 U. S. 19, State of Missouri ex rel. Southwestern Bell Telephone Co. v. Public Service Commission, 262 U. S. 276, Bluefield Water [fol. 287] Works & Improvement Co. v. Public Service Commission, 262 U. S. 679, Georgia Railway & Power Company v. Railroad Commission of Georgia, 262 U. S. 625).

Original cost to the vendor companies was not shown notwithstanding the industrious efforts of the plaintiff supplemented by the efforts of the defendants, and in my opinion it is incapable of proof.

The ledger balances of such companies and the opening entries in the plaintiff's books of the same date were, however, produced in evidence.

These ledger balances of the vendor companies carried the assets acquired by the plaintiff at $16,524,095.35, included in which was an item of $1,250,000 for Franchises and Rights carried on the books of The Citizen Gas Company of Brooklyn, one of the vendor corporations. Deducting this item leaves $15,274,095.35, at which sum the physical assets conveyed to plaintiff were carried by the vendor corporations.

The original journal entries of the plaintiff on their purchase of the same properties indicated an aggregate valuation of $28,799,731.92, in which was included $3,050,000, the valuation of "Franchises" and "Rights." The last item had not appeared upon the books of the vendor [fol. 288] corporations with the exception of $1,250,000 hereinbefore referred to. Deducting $3,050,000, the valuation given by plaintiff to the physical property so acquired was $25,749,731.93.

It having been found to be impossible to establish the actual original cost of the vendors, plaintiff called an expert who testified on the basis of incomplete books of the vendor corporations, the general trend of prices during the corporate lives of such corporations to the date of conveyance, and because of being unable to ascertain the dates of actual construction applying index values throughout the period, that the cost of that property should have been $23,976,790, excluding land, franchises, working capital, and going concern value. This same witness testified that in

his opinion the reproducable value of these properties in November, 1895 was $17,996,216, excluding land, franchises, working capital, and going concern value. The vendors carried on their books the land sold to plaintiff at a valuation of $2,619,226. The plaintiff in its opening journal entries valued the same property at $5,349,400.

At the time the purchase was consummated the aggregate par value of the outstanding stock of the vendor companies was $9,970,000 and of bonds $3,900,000, making in [fol. 289] all $13,870,000, and the approximate market value was $20,000,000.

Defendants contend that in attempting to arrive at cost or book value, there should be deducted from $28,799,731.92, the valuation at which the purchased properties were originally entered on the books of the plaintiff, the sum of $10,475,636.57 in addition to the sum of $3,050,000, the valuation of franchises and rights, which the Master has already deducted, which would leave $15,274,095.35, the sum, which defendants contend should be taken as showing cost or book value at that time.

To support this defendants point to the testimony of a Vice-President of the plaintiff before a legislative committee in 1905, when in substance he said, in reply to questions about the difference between the closing entries in the books of the vendor companies and the opening entries in plaintiff's books, that $3,050,000 represented franchises and rights, $4,000,000 was added to the Street Main Account, and $5,000,000 was added to the Plant Account for the right to do business, a total of about $12,000,000.

This does not, however, seem to me to be conclusive because the witness in his testimony before the committee was [fol. 290] evidently in error when he said that $5,000,000 was added to the Plant Account, as the evidence shows that the closing entry on the books of the vendor corporations was Plant and Patents $9,731,384.83, and the plaintiff's opening entry was $10,687,853.31, a difference of less than a million instead of five.

Furthermore, substantially all of the items seem to have been written up, and while there is a large increase in the valuation of street mains, there is also an increase of approximately $2,700,000 in the value of land.

The transaction between the plaintiff and the vendor

companies was not a consolidation nor a merger but a simple purchase preceded by negotiations, and I see no reason to believe that the plaintiff paid to the vendor companies more than it considered a fair price for their assets.

In any event, however, it is the property, and not the original cost, of which the owner may not be deprived, and our object is to determine the value of the property in present money, original cost being but one of the elements to be considered (Monroe Gaslight & Fuel Co. v. Michigan Public Utilities Commission, et al., 292 Fed. 139, New York Telephone Co. v. Prendergast, 300 Fed. 822).

[fol. 291] Historical cost may be more readily traced after December 31, 1908, because on January 1, 1909, a uniform system of accounts was promulgated by the Public Service Commission.

By stipulation the withdrawals from fixed capital between November 4, 1905 and December 31, 1908 were fixed at $4,000,000.

Between November 4, 1895 and December 31, 1908 the plaintiff purchased the Equity Gas Works and paid therefor $568,066.

During the same time the plaintiff had also acquired the entire capital stock of five subsidiary corporations, viz., Jamaica Gas Light Company, Richmond Hill and Queens County Gas Light Company, The Woodhaven Gas Light Company, The Newtown Gas Light Company, and The Flatbush Gas Company.

These corporations while maintaining a separate corporate existence manufacture no gas but purchase the gas from the plaintiff which they distribute to their consumers, and certain properties owned by the plaintiff are used by these subsidiaries.

The actual cost of such properties so allocated cannot be definitely determined, but I agree with the Master's estimate that the cost of the properties used by the subsidiaries [fol. 292] should be ten per cent of the value of plaintiff's property.

I agree with the Master's statement that an analysis of the books of the plaintiff would indicate (though not establish) the net cost of the physical properties, including the

Equity Gas Works, and excluding property utilized by the subsidiaries on June 1, 1923 was $38,517,199.94.

On June 1, 1923 the outstanding stock at par and bonds at face value of the plaintiff aggregated $46,579,000, and their market value was $48,750,000.

On that day the fixed capital of the plaintiff, as the same appeared upon its books of account, was $46,149,133.93, excluding any value for franchise and rights.

The plaintiff is a large company and on June 1, 1923 operated six manufacturing plants having an aggregate daily capacity of nearly 125,000,000 cubic feet; its maximum daily send-out during the winter of 1923 and 1924 was nearly 95,000,000 cubic feet. Its properties are fully described by the Master.

Exception has been taken to the findings of the Master as to the various items which go to make up the cost of replacement.

[fol. 293] The defendants contend that the Master erred by failing to deduct from the amounts as found by him a proper amount for depreciation of the several items, and ask this court to deduct depreciation from what it may find to be the cost of replacement of the several items, but no evidence was offered by the defendants to show that there was any depreciation or what was the amount thereof, either in rate based on percentages or in any fixed sum.

As I understand the contention of the defendants, it is that the court should take judicial notice of the fact that all things depreciate in value, and cite Knoxville v. Water Co., 212 U. S. 1.

Plaintiff contends that the most recent decisions hold that depreciation can be found only if it exists in fact, based on definite testimony of competent experts who have examined the structural units and speak concerning observed conditions, and cite Pacific Gas & Electric Co. v. San Francisco, 265 U. S. 403, New York Telephone Co. v. Prendergast, 300 Fed. 822, Westinghouse Electric & Mfg. Co. v. Denver Tramway Co., 3 Fed. (2nd) 285.

Even in Knoxville v. Water Co., supra, cited by the defendants as supporting their contention, we find that testimony was given showing depreciation, because at page 14 the Court said:

[fol. 294] "After the company had closed its case the city undertook to determine the present value of the company's property by the plain method of ascertaining the cost of reproduction, diminished by depreciation."

Not only did the defendants fail to call any witnesses to show depreciation, but the witnesses for the plaintiff, as to nearly all items, testified that there was none.

The properties of the plaintiff are maintained in a high order of efficiency, and that they might have been as good as new for the purposes of the company on June 1, 1923, is not improbable when your consider the narrow line between replacements and repairs, and it must be that parts are being replaced daily and charged as repairs, so that that plant being kept in a high order of efficiency by such replacements, the plaintiff's witnesses do not consider that there is any depreciation.

The witnesses do in some instances testify to sums necessary to put portions of the property in condition equal to new, and these deductions must be made.

The defendants now claim that the Master erred in not making deductions for depreciation as to the several items making up the cost of replacement, but I cannot agree with them, because if they desired such a finding, the defendants, with the large corps of experts under their control, could [fol. 295] have easily shown the fact, if such it be, and the basis on which depreciation should be figured, and having failed to make any such showing, they cannot complain because the Master failed to make such findings, as it appears to me that in his finding of a fair value much lower than the cost of replacement as found by him, he must have made all the allowance for depreciation that was warranted by the evidence.

Plaintiff seems to contend that because no evidence was offered by any experts called by the defendants as to values, this Court is bound to accept the testimony of the plaintiff's expert witnesses and allow the amounts testified to by such experts, and cites Ohio Utilities Co. v. Public Utilities Commission of Ohio, decided by the United States Supreme Court March 2, 1925. But that case does not seem to be in point because in that case there was a valuation by the engineers of the commission, which was acquiesced in by

the company, and no substantial evidence was found in the record to the contrary.

In the case at bar while the defendants called no expert witnesses, they did cross-examine the plaintiff's experts, and the Court has a right to consider the testimony given in the light of the cross-examination, and accord to it such [fol. 296] weight as it deems proper (Head v. Hargrave, 105 U. S. 45, The Conqueror, 166 U. S. 110).

The defendants or one of them have excepted to the finding of the Master as to nearly if not all of the elements that go to make up the cost of replacement as found by the Master, and the plaintiff has likewise excepted to his findings as to some of them.

As I understand the law, it is my duty to give my individual judgment in this matter. I have therefore examined the evidence as to each of such items.

The evidence on which the finding must be based is largely that given by the plaintiff's witnesses as the defendants called but few witnesses to contradict them.

The defendants contend that allowances should be made for depreciation as to many of the items, but there is no evidence in the record which fixes any basis for determining depreciation.

The defendants cross-examined the plaintiff's witnesses but such cross-examination does not furnish a basis for any specific deductions other than those made by the Master.

The amount for repaving under the item for Services was not for replacing paving for the whole system, nor in any cases where no pavement existed at the time, or where an [fol. 297] improved pavement had been laid since the services were originally installed, but the witness testified that it was for the same kind of pavements which were cut and replaced when the services were originally installed.

No finding deducting anything from the item for Services when the same were laid on the consumers' property inside the building line can be based on the fact that some consumers had contributed an amount which was not definitely shown on account of the whole expense of installing services, because that would not be a proper deduction, the only deduction that could properly be made would be the value of the property, if any, included in that item which belonged to the consumers, and no testimony was offered

to prove that title to any was in the consumer. The testimony shows that all replacements of services were made at the expense of the company, and there is no proof of their intention to give them to the consumer when they were laid on the consumer's property at his invitation and with his license.

From the Master's opinion it would seem that he had intended to find that $7,000,000 was the cost of reproducing buildings and structures other than manufacturing plant [fol. 298] and stations after deducting $20,756, the amount which the expert had testified it would be necessary to expend to restore these buildings to a condition equal to new, and that he had also intended to find that $14,500,000 was the cost of reproducing manufacturing plant, stations and gas-holders after deducting $528,368, the amount which the expert has testified it would be necessary to expend to restore those properties to a condition equal to new; but inasmuch as he made specific findings Numbers 76 and 77, that said several sums should be deducted from the reproduction cost, he must be held to have meant that they were to be deducted from such sums.

The plaintiff contends, and I believe properly, that the assessed values for the purpose of real estate taxation of the land and buildings as of October 1, 1923, were improperly received over its objection.

No assessor was called to testify and qualified as an expert, and as I read the record, the concession of the plaintiff was only as to the fact of the assessment and not as to its admissibility.

Even if the assessed values were admissible they would not furnish a safe guide either as to land or buildings, and that is especially true as to buildings, because too many [fol. 299] elements enter into an assessment for real estate taxation which have no place in the determination of the value of real estate, either in the case of private sale, condemnation or confiscation.

However, the cross-examination of the experts showed that in some instances the sales on which they relied, or which they claimed assisted them, warranted the Master in reducing their valuations, and I therefore accept the valuation found by him.

I do not agree in every instance with the reasoning of

the Master, but it does seem to me that the evidence supports his findings of the reproduction cost, and while he may have made a slight sacrifice to round numbers, the result would not be changed by carrrying them out. The amounts found by him are as follows:

Land		$3,000,000
Manufacturing plants, stations and holders		14,500,000
Buildings and structures other than manufacturing plants and stations		7,000,000
Mains		18,000,000
Services		6,250,000
Meters		4,000,000
Overhead and financing		11,000,000
Equipment		600,000
		$64,350,000
[fol. 300] From which must be deducted the amounts deducted by the Master in findings Numbers 76 and 77 as necessary to restore buildings and structures other than manufacturing plants and stations to a condition equal to new	$20,756	
and to restore manufacturing plant, stations and gas-holders to a condition equal to new	528,368	
amounting in all to		549,124
Total reproduction cost		$63,800,876

From this total there must be deducted the value of the property owned by the plaintiff but used by the subsidiaries, as reported by the Master, amounting to $6,498,090, and there remains the sum of $57,302,786, which I find to be the reproduction cost as of June 1, 1923.

The following elements must be considered to determine fair value.

Original cost not established but indicated by an analysis of the books of the plaintiff, $38,517,199.14.

Book value, $46,149,133 33.

Capitalization about $46,500,000, represented by outstanding stocks and bonds with a market value of $48,750,000.

Reproduction cost, $57,302,786.

[fol. 301] All the properties are serviceable and in excellent condition, although some are half a century old, some being more serviceable than others because they are more modern.

Original cost in this instance is at best but an estimate and cannot be a fair measure of value because it is too remote, and it does not seem to me that reproduction cost, as found, can be the fair value of the property, because no one would purchase physical property of the age of this property at the same price they would pay for new; therefore, taking into consideration all the elements which must be considered (Smyth v. Ames, supra, Georgia Railway & Power Co., v. Railway Commission of Georgia, supra, and Bluefield Land & Water Co. v. Commission, supra), I agree with the Master that the fair value of these properties can be fixed at $50,000,000 as of June 1, 1923.

What we are to find is the fair value of the property which the plaintiff was devoting to the public service, and not the value of what the defendants may have considered an efficient substitute.

In my opinion Pacific Gas & Electric Co., 265 U. S. 403, is not an authority in support of defendants' contention, [fol. 302] because in that case the Court was dealing with an established fact, while in this case it would be a matter of speculation.

I am of the opinion that there is a going value to the property of the plaintiff, and while it may be greater, I do not feel that on the evidence offered in the case at bar it could be fixed at more than $6,000,000, if on the evidence it could be fixed at any specific sum, and if there was something for going value included in the price paid by the plaintiff, in its stocks and bonds, to the vendor corporations in November 1895, it is more than covered in this amount.

Therefore, it seems to me that the Master was right in el-minating any allowance for going value in the case at bar, in ascertaining reproduction cost or in adopting a rate base, and I shall follow that course in the belief that by so doing the rate base as found by me is established beyond a reasonable doubt.

I agree with the Master and allow $5,000,000 for working capital.

Adding this to $50,000,000, which I have found to be the fair value, a rate base of $55,000,000 is established as of June 1, 1923.

Between June 1, 1923 and December 31, 1923, additions were made to the capital after deducting withdrawals of [fol. 303] the net amount in the aggregate of $3,856,971, and deducting therefrom the amount of $764,458, allocated to the use of subsidiaries, leaves $3,092,513, which added to $55,000,000, makes the rate base $58,092,513 as of December 31, 1923.

No argument was presented either orally or by brief on behalf of the defendants constituting the Public Service Commission against the findings of the Master as to the cost of manufacturing and distributing gas of any of the standards described, nor as to the relations of plaintiff with and charges to the subsidiary companies.

It may therefore be assumed that the actions of the plaintiff with reference to those subjects, as found by the Master, are approved by the commission charged by law with the regulation of all matters relating to plaintiff.

The only argument against said findings was made both orally and by brief on behalf of the defendant Attorney General.

The subsidiary companies do not manufacture any gas but all the gas sold by them is manufactured by the plaintiff and sold to the subsidiaries, and the books of the plaintiff properly show the cost of gas distributed to its consumers.

[fol. 304] The plaintiff's methods in making purchases were efficient and the prices paid reasonable, as exemplified in the reduced price at which oil was obtained, and this is not controverted by any evidence offered by the defendants.

The relations between the plaintiff and its subsidiaries and their methods of fixing the prices to be paid by the subsidiaries are not properly subject to criticism.

The difference between the amount of gas that had been served during the year, as found by a calculation at the close of the year, and the amount estimated at the beginning of the year as the amount that would be required, was too small to justify recasting the system of accounting, and I see no reason for requiring it.

The plaintiff is operating several plants and the costs are not uniform, but all of these plants are efficiently operated although they are not equally well equipped.

In some instances the costs of manufacture were higher because certain repairs were in progress during the period under consideration, but the consumer cannot get the benefit of lower cost and more efficient service unless the plants are kept in repair and the attainment of greater efficiency [fol. 305] is the motive for making the repairs, which will reduce the cost of operation.

The making of repairs must be going on each year in one plant or another if efficiency is to be preserved, and the plaintiff should not be penalized for keeping its plants efficient.

The plant where the cost of operation was the highest was the Equity, which serves a remote section of the territory in which plaintiff furnishes gas, and I find nothing in the evidence which warrants a finding that this plant could be dispensed with, or that cost of operation of this plant should be standardized on the basis of the cost of operation of a large plant which can serve the territory adjacent to it and which is more favorably located.

Therefore, in the fact of the uncontroverted evidence of Col. Miller, that he had compared the operating costs of the plaintiff with the operating costs of the companies throughout the Metropolitan District, and the results of such comparisons did not indicate any unusual feature, I can see no reason or justice in establishing one or a number [fol. 306] of them as a standard, or in refusing to base the cost of operation on the cost or producing the entire amount of gas sold by the plaintiff, no matter where manufactured.

I agree with the Master that the books and records of the company are properly kept and the plants are efficiently operated, and the plaintiff offered evidence to show the actual results of operation for 1922 and 1923.

To calculate repairs on the basis of the average for five years shows but a negligible difference from a calculation as made by the plaintiff, but it might properly entail a consideration of varying costs of material and labor without producing a result which would be as nearly accurate as that which was made by the plaintiff and approved by the Master, as the evidence shows that we may reasonably assume that present prices will continue for some time.

I therefore approve of the method pursued as proper.

The Attorney General contends that unaccounted for gas, that is due to leakage, condensation, expansion and contraction, among other things, should be allowed at an arbitrary figure of 5%, but I do not agree with him because in my opinion the proper method is to allow it on the basis [fol. 307] of the companies' own records, which show the results of experience.

In this action where the question to be determined is whether or not the rate is confiscatory, I do not think we we should allow the sum of $108,868.23 spent by plaintiff in making adjustments to conform to the order of the Commission which went into effect October 1, 1922, nor the sum of $94,524.89 estimated as the cost of maintaining this action, because they are abnormal and should not be regarded as a part of the cost of manufacture for this purpose.

The item of uncollectible bills was properly allowed by the Master, and the gross earnings tax properly allowed at $105,625.33.

Counsel for the Attorney General contends that the reasonable and necessary cost of making and distributing gas should not have exceeded 77.96 cents per thousand cubic feet sold.

The calculation and argument presented in its support show industry on the part of the attorneys who appeared on the argument, but did not, in my opinion, find support in the evidence taken on the trial; and this case like all others must be determined on the evidence and not on the argument of counsel.

[fol. 308] The principal points of objection taken by the Attorney General to the evidence of cost of manufacture and distribution offered by the plaintiff, namely, that the cost of operation should not be based on the costs of all the plants but on that of four of the plants which he deems the most efficient, that unaccounted for gas should not be allowed on the basis of experience of the company but at an arbitrary figure of 5%, and as to gross earnings taxes have already been discussed and decided.

The miscellaneous objections seem to have been considered and properly determined by the Master, and but one of them need be mentioned.

Some years ago a holder was built on the lands of and in the name of The Newtown Gas Company. Plaintiff loaned the Newtown Gas Company all of the money to build the same, and charges The Newtown Gas Company 8% interest for said loan. The plaintiff uses the holder which it maintains and pays 8% for its use.

This transaction does not present to my mind anything requiring correction, especially when you consider the statement from the attorney for the defendant Attorney General, that The Newtown Gas Company had no need of such holder, from which I understand that it was built for the [fol. 309] use of plaintiff, the tenant, but it simply represents the established difference between interest rates and rental value economically figured.

I therefore approve the finding of the Master that the reasonable and necessary cost to furnish gas of a standard of not less than 650 B. T. U., as required by the statute, would be at least 93.56 cents per thousand cubic feet.

The plaintiff in 1923 received from the sale of residuals and gas appliances $343,943, which is equivalent to 2.24 cents per thousand cubic feet of gas sold.

Modifying the entire operating income of the plaintiff by the lower price at which it sells gas to the City of New York, it equals $1.0206 per thousand cubic feet of gas sold at a cost of 93.56 cents per thousand cubic feet.

In order to furnish gas to the consumer at 537 B. T. U., it is necessary that the gas at the works should contain 550 B. T. U.

Taking the lower cost of oil in 1923 rather than the price actually paid in 1922 and 1923, the cost of manufacture and delivery of 537 B. T. U. gas would be approximately 86.85 cents per thousand cubic feet, disregarding any increase in [fol. 310] the required quantity of coal and the loss of volume from the decrease in the quantity of oil.

On the question of the rate of return to which plaintiff is entitled, the only evidence given was that of the expert witness called by the plaintiff, who placed it at 8%, which was approved by the Master in his opinion.

The defendants, by way of argument only, because they called no witness, contend that the Act cannot be held to be confiscatory if plaintiff receives a return of 8%.

Whatever force there might be to the argument of the

defendants under some circumstances, it seems to be lost in the instant case when you consider that bonds issued by this plaintiff while under the regulation of the defendant Public Service Commission, and with its approval, bear interest at the rate of 7% per annum, showing clearly that the lending public did not consider 6% as an adequate return.

Therefore, on the evidence in the instant case and on consideration of the opinions of the courts in New York & Queens Gas Co. v. Prendergast, 1 Fed. (2nd) 351, Bronx Gas & Electric Co. v. Prendergast, 1 Fed. (2nd) 377, New York Telephone Co. v. Prendergast, 300 Fed. 822, Blue-[fol. 311] field Water Works and Imp. Co. v. Public Service Comm., 262 U. S. 679, and Consolidated Gas Co. v. Prendergast, S. D. N. Y., decided April 22, 1925, I see no reason to disagree with the opinion of the Master.

In the case at bar, however, at the rate of $1.00 per thousand cubic feet, the plaintiff cannot obtain a return even approximating 6% at any standard, even of 537 B. T. U.

As I construe this statute the plaintiff is required to deliver to the consumer gas containing the statutory thermal content.

To do this the gas at the point of manufacture must contain a greater thermal content than prescribed by the statute, as there is a loss in the transmission of gas due, among other things, to condensation.

The sales of gas by the plaintiff aggregate 15,300,373 thousand cubic feet.

The yield to the plaintiff in the several alternatives would be as follows:

The cost of manufacture and distribution of 650 B. T. U. gas being 93.56 cents per thousand cubic feet, and the income from the sale of gas, gas-appliances and residuals [fol. 312] aggegating $1.0206, the yield would be 8.5 cents per thousand cubic feet or $1,300,531.71 per annum, the equivalent of 2 and 365/1000 per cent upon $55,000,000, the rate base as of June 1, 1923, or of 2 and 24/100 per cent upon $58,092,513, the rate base as of December 31, 1923.

If plaintiff should continue to manufacture and distribute 587 B. T. U. gas, its 1923 standard, the cost would be 90.49 cents per thousand cubic feet, and at the rate nominated

in the statute it would yield $1,770,253.16 per annum, or 3 and 22/100 per cent upon $55,000,000, the rate base as of June 1, 1923, or 3 and 5/100 per cent upon $58,092,513, the rate base as of December 31, 1923. If the statute was so construed as to permit plaintiff to manufacture and distribute 537 B. T. U. Gas, the cost would be 86.25 cents per thousand cubic feet, and at the price prescribed in the statute, the yield would be $2,327,187 per annum, or 4 and 23/100 per cent upon $55,000,000, the rate base as of June 1, 1923, or 4 per cent upon $58,092,513, the rate base as of December 31, 1923.

The property of the plaintiff will be confiscated by the operation of the statute in question. In fact, if the plaintiff be required to manufacture and distribute 650 B. T. U. gas at the rate prescribed by statute, the yield would not be [fol. 313] sufficient to pay the sum of $1,640,530 the yearly interest on the face value of the bonds issued by the plaintiff, to say nothing about paying any dividend on the capital stock.

The face value of bonds issued by the plaintiff is less than the amount which the defendants contend is the fair value of plaintiff's said property used and useful for the service of the public.

The defendant Attorney General seems to have dropped the contention he made before the Master that there could be no confiscation until the plaintiff had exhausted its contingency account in making good any losses incurred by operating under the statute, and therefore the question needs no further discussion and I will content myself with saying that I am in entire accord with the opinion of the Master that to take any of this account is to take the property of the plaintiff and would be confiscation.

The only subject remaining for consideration is the construction of the statute.

The Master has found it unconstitutional in its entirety. The defendant Attorney General contends that the provisions of the Act are severable and that if the standard provision be found unconstitutional, the rate should still [fol. 314] stand.

The statute, to my mind, clearly had but one purpose, which was to compel the gas companies of the City of New

York to furnish gas of a standard of 650 B. T. U. at the unchangeable rate of one dollar per thousand cubic feet.

However you may attempt to construe the provisions of the Act they are found to be correlated, because while the first provision is as to price, clearly it can only be gas of the standard described in the section which is permitted to be sold for that price, and the second provision establishes the standard of quality of gas to be sold at that price, while the third provision prohibits the Public Service Commission for increasing the statutory rate for gas permitted to be sold under said section.

The last provision was undoubtedly inserted to repeal so much of Section 72 of the Public Service Commission Law, supra, as gave the Public Service Commission the *rate* to change the rate which had been fixed by statute.

The title of the Act is "An Act to Amend the Public Service Commission Law in Relation to the Charge for Illuminating Gas in Cities Containing a Population of One [fol. 315] Million or Over."

The sole purpose as expressed in the title of the Act being to amend in relation to a charge for gas, the requirement as to standard of necessity must be an integral part of the charge for gas describing what standard of gas must be furnished for the specified rate.

To read the Act as suggested by the defendant Attorney General would lead to a condition never contemplated by the legislature, because instead of obtaining better gas the consumer would not be able to obtain gas of as good a quality as was possible before the passage of the Act.

In the case at bar it appears that the Act is confiscatory even if gas of the standard of 537 B. T. U. is required to be furnished for one dollar per thousand cubic feet; therefore, if the standard be declared unconstitutional and the provision as to rate sustained, the Public Service Commission would be obliged to establish a standard which they could constitutionally require to be furnished for the prescribed rate, and that would mean gas of a much lower standard than that required at the time of the passage of the statute.

The defendant Attorney General seems to contend that if the standard be declared invalid and the rate sustained, [fol. 316] the former order of the Public Service Commission, dated August 30, 1922, fixing the standard at 537

B. T. U., will at once be restored; but that does not seem to me so because that order was abrogated by the Commission's order dated June 4, 1923, which in part reads as follows:

"Ordered: That each and every gas corporation engaged in the business of manufacturing, furnishing or selling illuminating gas in the City of New York be and hereby is required forthwith to comply with such statute, and be and hereby is authorized to file and publish a new schedule of its rates for gas effective forthwith in accordance with said statute."

The Act further provides: "This Act shall take effect immediately", and that it applied to standard and rate and was so construed by the Public Service Commission appears from their order of June 4, 1923, supra.

If this language is to be construed as it reads, it means that it was intended to have the Act take effect on the day of its passage.

If this construction be correct, then the evidence clearly shows that it was impossible to make the necessary changes in appliances to comply with the Act, and to have attempted to furnish 650 B. T. U. gas without making such changes would have been inimical to the property and even to the lives of the consumers, and it was impossible to comply therewith.

[fol. 317] There was no place described in the Act where the standard was to be measured, and if it was held this meant the place of delivery to the consumer, it would have meant at least 665 B. T. U. at the place of manufacture.

The Attorney General advances the theory that there should be read into the statute an intention by the legislature to allow a reasonable time to the plaintiff and other gas companies thereby affected to make the necessary adjustments of appliances.

I can find no authority for any such construction because even the inclusion of express language to that effect in the statute would leave the plaintiff in a position where it could not know in advance whether or not its act was in violation of the statute.

The criminality of an act cannot depend upon whether a jury might think it reasonable or unreasonable, (Tozer v.

United States, 52 Fed. 917: Chicago & N. W. Railway Co. v. Dey, 35 Fed. 866).

This theory advanced by the Attorney General cannot be sustained.

The provisions of the statute as to rate and standard are not severable (New York & Queens Gas Co. v. Prendergast, 1 Fed. (2nd) 351.

[fols. 318 & 319] The rate provided in the statute would deprive the plaintiff of its property without due process of law if the gas required to be furnished be of the standard prescribed in the statute or even of the standard required by the order of the Public Service Commission of August 30, 1922, and the provision of the statute with reference to standard is incapable of performance.

Chapter 899 of the Laws of New York 1923, as worded, is not separable into parts, but in its entirety violates Section 1 of Article 14 of the Federal Constitution.

The parties may submit a proposed decree and findings in the form of final decree, in accordance with the views herein indicated, modifying the report, and as so modified by such decree, the report will be in all respects confirmed.

—— ——, U. S. D. J.

[fol. 320] In United States District Court

[Title omitted]

Notice of Final Decree

Sirs: A final decree of which the following is a true copy was this day duly made and entered in the office of the Clerk of the United States District Court for the Eastern District of New York.

Dated August 3, 1925.

Yours, &c., Cullen & Dykman, Solicitors for Plaintiff, 177 Montague Street, Brooklyn, New York.

To Charles G. Blakesley, Esq., Solicitor for Defendants William A. Prendergast et al., 50 Church Street, New York, N. Y.; John Holley Clark, Jr., Esq., Solicitor for Ddefendant Albert Ottinger, 49 Chambers Street, New York, N. Y.

[fol. 321] IN UNITED STATES DISTRICT COURT

[Title omitted]

FINAL DECREE—August 3, 1925

This cause came on to be heard at the April 1925 term of this Court and was argued by counsel; and thereupon upon consideration thereof it is

Ordered, adjudged, and decreed

I. Plaintiff's exception IV to finding numbered 70 in the report of the Special Master filed herein March 21, 1925 is sustained.

II. The other exceptions filed herein by the plaintiff and by the respective defendants are severally overruled, except to the extent and in the respects indicated in the opinion of Campbell, D. J., filed herein June 24, 1925.

[fol. 322] III. Finding numbered 108 in the report of the Special Master filed herein March 21, 1925 is modified to read as follows and as so modified made the finding of this court:

"108. The cost to reproduce the manufacturing plants, distribution system and other property owned by plaintiff, used and useful in the public service as of June 1, 1923, at the prices of labor and material then prevailing was and is, after deducting the portion thereof devoted to the use of the so-called subsidiary companies and without any allowance for working capital, at least the sum of $57,302,786 made up as follows:

Land	$3,000,000 00
Manufacturing plants, stations and holders	14,500,000 00
Buildings and structures other than manufacturing plants and stations	7,000,000 00
Mains	18,000,000 00
Services	6,250,000 00
Meters	4,000,000 00
Overhead and financing	11,000,000 00
Equipment	600,000 00
	$64,350,000 00

From which must be deducted the amounts deducted by the Master in findings Numbers 76 and 77 as necessary to restore buildings and structures other than manufacturing plants and stations to a condition equal to new	$20,756 00	
and to restore manufacturing plant, stations and gas holders to a condition equal to new	528,368 00	
amounting in all to		549,124 00
Total reproduction cost		$63,800,876 00

[fol. 323] From this total there must be deducted the value of the property owned by the plaintiff devoted to the use of subsidiary companies amounting to $6,498,090 and there remains the sum of $57,302,786 hereby found to be the reproduction cost as of June 1, 1923."

IV. The report and opinion of the Special Master filed herein March 21, 1925 are hereby confirmed except in the respects and to the extent indicated above.

V. A maximum rate of $1.00 per thousand cubic feet of gas sold by the plaintiff, in conjunction with or apart from the standard of 650 minimum British thermal units per cubic foot, is illegal and void, because in contravention of Section 1 of Article 14 of the Articles in addition to and amendment of the Constitution of the United States of America; and the provisions of Chapter 480 of the Laws of 1910 of the State of New York, known as the Public Service Commission Law, as amended and supplemented, and of Chapter 899 of the Laws of 1923, in so far as they prohibit the plaintiff from charging or receiving for gas manufactured and sold in the City of New York, a sum, per one thousand cubic feet, in excess of the rate of one dollar per thousand cubic feet, in conjunction with or apart from the said standard, are each likewise illegal and void.

VI. A standard of gas, required to be furnished by the plaintiff, of not less than 650 British thermal units per

cubic foot, in conjunction with a rate not exceeding $1.00 per thousand cubic feet of gas, is likewise illegal and void; and the provisions of the said Chapter 480 of the Laws of 1910, as amended and supplemented and of Chapter 899 of the Laws of 1923, in so far as they prohibit the plain-
[fol. 324] tiff from furnishing gas of a standard less than 650 British thermal units per cubic foot, measured under normal conditions of temperature and atmospheric pressure, in conjunction with the rate prescribed thereby, are likewise illegal and void.

VII. The provisions of Chapter 480 of the Laws of 1910, as amended and supplemented, and of Chapter 899 of the Laws of 1923, in so far as they prohibited or prohibit the plaintiff from furnishing gas of a standard less than 650 British thermal units per cubic foot, without affording the plaintiff an opportunity and a reasonable time within which to make, or to have its consumers make, such readjustment of and changes in the gas appliances of the consumers as might be necessary in order to adapt them for the safe and efficient use of gas of such standard and to protect the consuming public against the very obvious and serious dangers to human life and property, or in so far as they denied to the plaintiff a safe and adequate judicial review of the legality thereof without incurring the penalties provided by the said statutes, are likewise illegal and void.

VIII. The said Chapter 480 of the Laws of 1910, as amended and supplemented, or any other provisions of law, or any regulation prescribed thereunder, in so far as it prohibits the plaintiff from putting into effect forthwith a rate or rates for gas distributed or sold by it which will afford to it just compensation therefor, is likewise illegal and void.

IX. The plaintiff has no adequate remedy at law for the injury which will result from the enforcement of said acts, and such injury will be irreparable.

[fol. 325] X. The defendants William A. Prendergast, William R. Pooley, Charles Van Voorhis, Oliver C. Semple and George R. Van Namee, constituting the Public Service Commission of the State of New York, and Albert Ottinger, as Attorney General of the State of New York, and each of them, and their, and each of their successors in office,

their deputies and attorneys, and their, and each of their successors, servants and employes, and any and every person acting or purporting to act under or by virtue of the authority of Chapter 480 of the Laws of the State of New York of 1910, as amended and supplemented, or any other or different provisions of law, be, and each of them is, hereby restrained and enjoined:

(1) From in any way enforcing or attempting to enforce against the plaintiff a rate for gas furnished by the plaintiff to its general consumers of not more than $1.00 per thousand cubic feet of gas sold, under the provisions of the said Acts or otherwise;

(2) From in any way enforcing or attempting to enforce against the plaintiff the provisions of the said Act, in so far as they prohibit the plaintiff from charging or receiving for gas furnished in the City of New York, a sum, per one thousand cubic feet, in excess of $1.00, in conjunction with or apart from the said standard of gas;

(3) From enforcing or attempting to enforce against the plaintiff a standard of gas furnished by the plaintiff of not less than 650 British thermal units per cubic foot, or the provisions of the said Acts in so far as they prohibit the plaintiff from furnishing a gas of a standard less than 650 British thermal units per cubic foot, measured under normal conditions of temperature and atmospheric pressure;

[fol. 326] (4) From bringing any action or proceeding to enforce the said penalties against the plaintiff, or by mandamus or injunction or otherwise, to compel compliance by the plaintiff with the provisions of the said Acts, or any of them, relative to the said maximum rates or charges;

(5) From doing any act or thing interfering with the right or authority of the plaintiff forthwith to furnish gas of any standard which it may lawfully furnish and to charge or receive for gas furnished by it any rate which it may lawfully charge or receive, any provisions of the said Acts or of any regulations prescribed thereunder relative to the rate to be charged and received or to the standard of gas to be furnished by the plaintiff, to the contrary notwithstanding.

XI. At any time while the injunction herein granted remains in force, any party hereto or his or its successors or assigns, may apply by notice at the foot hereof, to vacate, modify or extend the foregoing injunction because of any change of circumstances since the entry hereof, or for any additional relief to which he or it may deem himself or itself entitled by reason of any acts or events occurring after the date of this decree.

XII. If, within the time hereinafter prescribed, an appeal from this decree is taken by the defendants, or any of them, then within ten days thereafter, the plaintiff shall file with the Clerk of this Court, in form and tenor first approved by this Court, its undertaking, in the sum of the excess collections hereinafter described, together with interest thereon, conditioned for the repayment to the consumers of the plaintiff, in the event that this decree is [fol. 327] reversed on appeal and it is ultimately decided that the plaintiff is not entitled to relief in this action, of the respective sums of money received and collected by the plaintiff from such consumers in excess of the sums which would have been received if such gas had been sold and billed at the rate of One Dollar ($1.00) per thousand cubic feet, together with interest at the rate of six (6) per cent. upon any such excess so collected and repaid.

XIII. Upon filing such bond and thereafter, unless and until this Court shall otherwise direct, the plaintiff shall be entitled to and may retain and use any and all moneys received and collected by it in excess of the sums which would have been received and collected at the said rate of One Dollar ($1.00) per thousand cubic feet of gas sold.

XIV. If an appeal from this decree is taken by the defendants, or any of them, and the invalidity of Chapter 899 of the Laws of 1923, is sustained in so far as it prescribed a rate or rates as to the plaintiff, the said undertaking shall thereupon and thereby be cancelled or annulled, and the plaintiff shall thereupon and thereby be relieved from any and all liability thereunder, and appropriate directions accordingly shall be made by this Court.

XV. The plaintiff shall be required to do the acts and things specified in Paragraph XI hereof only in case an appeal from the decree is taken by the defendants, or any of

them, within thirty (30) days from the entry of this decree, and in case the defendants so appealing, and each of them, shall perfect and prosecute any such appeal and print and file the record and all necessary papers to that end, promptly and without delay, and shall, with all convenient [fol. 328] speed thereafter, serve a notice of application to the Supreme Court of the United States to advance the said appeal upon the calendar of the said Court.

XVI. The plaintiff shall recover its taxable costs and disbursements of the defendants, including the sum fixed and allowed as the compensation of the Special Master herein and his necessary disbursements, to be equally borne and paid by the defendants, in accordance with the rules of the Supreme Court of the United States on this subject.

XVII. Nothing contained herein shall be construed to limit, prejudice or restrict the exercise of the jurisdiction and power of the Public Service Commission of the State of New York under Chapter 480 of the Laws of 1910 as amended and supplemented, known as the Public Service Commission Law, or any other provisions of law, not in conflict with the provisions of this decree.

Brooklyn, N. Y., August 3, 1925.

Marcus B. Campbell, U. S. D. J.

[fol. 329] In United States District Court

[Title omitted]

Summons to Defendants William A. Prendergast, William R. Pooley, Charles Van Voorhis, George R. Lunn, and George R. Van Namee, Constituting the Public Service Commission of the State of New York

Please take notice that you are hereby summoned to join with me, Albert Ottinger, the Attorney-General of the State of New York, as a co-defendant in the above entitled cause on or before September 2, 1925, to prosecute an appeal in said cause from the decree and judgment of the United States District Court for the Eastern District of

New York, entered in the office of the clerk of said court on the 3rd day of August, 1925, to the United States Supreme Court, appealing to said court to reverse the said judgment and decree of the United States District Court entered against the defendants herein upon the date mentioned.

[fols 330 & 331] You are further notified that in case of failure on your part to join me in said appeal, the same will be regarded as an acquiescence on your part in said judgment and decree, and I shall thereupon enter an order of severance against you in the above entitled cause and shall prosecute said appeal without you.

You are further notified that on the 2nd day of September, 1925, at ten o'clock in the forenoon of that day or as soon thereafter as counsel can be heard, I will present my petition for leave to appeal in the above entitled cause, to Hon. Marcus B. Campbell, a Judge of the District Court of the United States for the Eastern District of New York, at his Chambers, Post Office Building, County of Kings, State of New York, at which time and place you may join with me in said petition and in default of your joining, application will be made for an order of severance against you, as aforesaid.

John Holley Clark, Jr., Solicitor for Defendant Ottinger, as Attorney-General.

Office & P. O. Address: 49 Chambers Street, New York City, N. Y.

Dated New York, August 17, 1925.

[fol. 332] In United States District Court

[Title omitted]

Assignments of Error—September 1, 1925

Now comes the Defendant Albert Ottinger, as Attorney-General of the State of New York, in the above entitled cause, and files the following Assignments of Error upon which he will rely upon his prosecution of the appeal in the above entitled cause from the decree made by this Honorable Court on the 3rd day of August, 1925:

1. That said Court erred in sustaining the report of the Special Master, denying the motion of the Defendant at the end of Plaintiff's case to dismiss the bill of complaint and overruling the exception of the Defendant to such denial.

2. That said Court erred in sustaining the report of the Special Master denying the motion of the Defendant at the end of Plaintiff's whole case to dismiss the bill of complaint and overruling the exception of defendant to such denial.

[fol. 333] 3. That said Court erred in confirming the report of the Special Master in finding marked, "31" thereof wherein the original cost of the property of the Plaintiff owned on June 1st, 1923 exclusive of property used by the subsidiary companies was purported to have been found, on the ground that the same is not supported by the evidence, is contrary to the evidence and against the weight thereof and further upon the ground that said finding is not a fair statement of the evidence nor are the conclusions therein contained fair conclusions to be drawn from the evidence. The Court should have found that while the actual original cost of the property acquired by the Plaintiff on November 4th, 1895 was not established by the evidence, yet the entries in such books and the method used in keeping such books indicated among other things, that the said books of the vendor companies did not show any credits to the various accounts for properties withdrawn from service as found in finding marked, "28" of the Master's Report; and further said books conclusively showed that the capital accounts appearing thereon greatly overstated the actual investment in the cost of such properties and that such cost did not exceed the sum of $25,000,000.

4. That said Court erred in confirming the report of the Special Master in finding marked, "31" thereof, purporting to describe the testimony given by witnesses for the defendant in regard to the books of the vendor companies on the ground that the said description of said testimony is not supported by the evidence, is contrary to the evidence and against the weight thereof.

[fol. 334] 5. That said Court erred in confirming the report of the Special Master in finding marked, "31" thereof under the sub-title (a) reading as follows:

"At the time these properties were acquired by the plaintiff, November 4th, 1895, journal entries upon the books of the plaintiff recording the transactions indicated a valuation inclusive of land, but exclusive of franchises of $25,749,731.93,"

on the ground that said finding is contrary to the evidence, not supported by the evidence and against the weight thereof. That said figure of $25,749,731.93 did not indicate a valuation of the properties acquired from the vendor companies, but, was merely a figure entered on the books indicating the amount of stock which the plaintiff company might be able to sell on the basis of the exorbitant rates then charged or to be charged.

6. That said Court erred in confirming the report of the Special Master in finding marked, "31" thereof wherein it is purported to be found that upon the basis of figures previously indicated the original cost of the properties acquired by the plaintiff plus net addition for fixed capital of June 1st, 1923, minus a figure of $4,000,000 for withdrawals amounted to $42,717,199 on the ground that said finding is not supported by the evidence, is contrary to the evidence and against the weight thereof.

7. That said Court erred in confirming the report of the Special Master in finding marked, "31" thereof wherein it is calculated that the properties used by the subsidiary companies of the plaintiff is approximately 10% of the total property or $4,200,000, on the ground that same is not supported by the evidence, is contrary to the evidence, and against the weight thereof. The Court should have found that that portion of the plaintiff's property used by the subsidiary companies is much in excess of 10% of the [fol. 335] total cost and that the total cost of the Plaintiff's entire property is much below the figure found.

8. That said Court erred in sustaining the report of the Special Master in finding marked "31" thereof, wherein it is stated:

"This method of analysis would lead to the opinion that the original cost of the property owned by the Plaintiff on June 1st, 1923 exclusive of property used by subsidiaries was $3,517,199.00,"

on the ground that same is contrary to the evidence, not supported by the evidence and against the weight thereof, and on the further ground that the figure given is excessive in respect to the cost of the Plaintiff's property.

9. That said Court erred in confirming the report of the Special Master in finding marked "31" thereof, subdivision (b) on the ground that the same is contrary to the evidence, is not supported by the evidence and against the weight thereof. The witness called to testify as to what the property ought to have cost on the basis of the average price prevailing during the period the various units were apparently constructed, was not qualified to testify on this subject and did not use a basis or method of calculation reasonably suited to obtain an accurate figure and further erred in sustaining the conclusion therein arrived at by the Master, to wit:

"By this method of analysis the original cost of the property of the Plaintiff owned on June 1st, 1923 exclusive of property utilized by the subsidiaries would seem to be, $39,263,484,"

on the ground that same is contrary to the evidence, not supported by the evidence and against the weight thereof;

[fol. 336] 10. That said Court erred in confirming the report of the Special Master in finding marked "31" thereof, wherein it is stated:

"These figures in each instance exclude any valuations for franchises, working capital or going concern value,"

on the ground that the same is not supported by the evidence, is contrary to the evidence and against the weight thereof; and upon the further ground that whatever was actually paid to the vendor, included valuation of franchises, working capital and going concern value and that there should therefore be no separate valuation made for them.

11. That said Court erred in confirming the report of the Special Master in finding marked, "31" thereof wherein it is stated that—

"Defendants offered no evidence on this subject except that the books of account of the vendor corporations were put in evidence by the Defendants,"

on the ground that said finding is not supported by the evidence, is contrary to the evidence and against the weight theerof.

12. That said Court erred in confirming the report of the Special Master in finding marked "40" of the Master's report on the ground that the same is not supported by the evidence, is contrary to the evidence and against the weight thereof.

13. That said Court erred in confirming the report of the Special Master in finding marked "45" which reads:

"Each of the properties described in this finding and the structures and equipment thereon are necessary to plaintiff and used and useful in the public service, and the defendants offered no evidence to the contrary" (p. 113),

on the ground that the said Finding is not supported by the evidence, is contrary to the evidence and against the weight thereof;

[fol. 337] and on the further ground that several of the buildings, structures and a large part of the equipment mentioned in said Finding are antiquated and obsolete, and the same are not used and useful by the plaintiff in its business; that the facts in regard to this were brought out by defendants on cross-examination of plaintiff's witnesses.

14. That said Court erred in confirming the report of the Special Master in finding marked "48" thereof, insofar as said finding purports to indicate that the book balances showed the actual cost of the property of the plaintiff company, on the ground that such books balances do not shown such cost but were grossly in excess of such cost.

15. That said Court erred in confirming the report of the Special Master in finding marked "49" which purports to

indicate that the totals of $49,767,200, $53,462,964, $43,-697,232 and $46,741,589 represent the actual investment of plaintiff or its vendor companies, on the ground that said figures are grossly excessive as indications of such cost.

16. That said Court erred in confirming the report of the Special Master in finding marked "57" which finds in substance that the books of account of the plaintiff company were kept in accordance with the rules and regulations of the Public Service Commission, and that said books, etc., accurately set forth the transactions entered therein, on the ground that the same is not supported by the evidence, is contrary to the evidence and against the weight thereof, as is shown in several instances by the Findings of the Master, numbered "67" and "68" wherein it was found as follows:

"The evidence shows that the amount of $10,138,046.78 was transferred from the account "Accrued Amortization of Capital" to the account, "Contingencies" without the [fol. 338] sanction or permission of the Public Service Commission of the State of New York."

"The evidence shows that the Public Service Commission of the State of New York protested to the complainant because the complainant transferred the amount of $10,138,047.78 from the account "Accrued Amortization of Capital" to the account of "Contingencies."

17. That said Court erred in confirming the report of the Special Master in Finding marked "69" insofar as it finds that (p. 120)—

"Defendants upon the trial introduced no evidence whatever upon the existence, used and usefulness of any item or quantity shown in such inventory or any unit price applied therein,"

on the ground that the same is not supported by the evidence, is contrary to the evidence and against the weight thereof; and on the further ground that the defendant showed on cross-examination that exhibits introduced by plaintiff contained a large number of items which were not used and useful in plaintiff's business.

18. That said Court erred in sustaining plaintiff's exception IV. to finding numbered "70" of the report of the Special Master wherein the assessed valuation of improvements in the parcels of land outside of the works belonging to the plaintiff in the month of October, 1922 were found by the Master, upon the ground that such finding of the Court is contrary to the law and the evidence.

19. That said Court erred in sustaining the report of the Special Master in Finding marked "75" on the ground that the said finding and conclusions therein contained are not supported by the evidence, are contrary to the evidence and against the weight thereof and are contrary to sound reasoning and ordinary human experience. The Court further erred in sustaining the report of the Special Master in Finding marked "76" on the ground that the same is contrary to the evidence, is not supported by the evidence and against the weight thereof; and on the further ground that the figure of $20,756 is grossly inadequate to measure the depreciation in the buildings and [fol. 339] structures of the plaintiff company.

20. That said Court erred in confirming the report of the Special Master in Finding marked "77" on the ground that the same is not supported by the evidence, is contrary to the evidence and against the weight thereof; and on the further ground that the figure of $528,368.40 is grossly inadequate to measure the depreciation in the manufacturing plants and stations and gas holders of the plaintiff company.

21. That said Court erred in confirming the report of the Special Master in Finding marked "78" on the ground that the same is not supported by the evidence, is contrary to the evidence and against the weight thereof; and on the further ground no proof was required to show that natural causes tend to lessen the worth of all earthly things; that under all the circumstances, the age of the properties, their continuous and hard usage over a long period of years, etc., the Court should have taken judicial notice of its depreciated value for rate making purposes, and on the further ground that the so-called evidence as to the expenditure required to restore the buildings to a condi-

tion equal to new did not give an adequate measure of the actual depreciation of such buildings.

22. That said Court erred in confirming the report of the Special Master in Finding marked "79" on the ground that the same is not supported by the evidence, is contrary to the evidence and against the weight thereof; and on the further ground that no evidence is necessary to show that natural causes tend to lessen the worth of all earthly things; that under all the circumstances, the age of the properties, their continuous and hard usage over a long period of years etc., the Court should have taken judicial notice of its depreciated value for rate making purposes and on the further ground that the so-called evidence as [fol. 340] to what expenditure would be required to restore the buildings and plant equipment to a condition equal to new, did not give an adequate measure of the actual depreciation or any value of such buildings and plant equipment.

23. That said Court erred in confirming the report of the Special Master in Finding marked, "88" on the ground that the same is not supported by the evidence, is contrary to the evidence and against the weight thereof; and on the further ground that the pavement in the streets does not increase the worth or value of the mains or services and also that the amounts allowed were not the actual cost of the paving.

24. Defendant excepts to the Finding marked "107" of the Master's report on the ground that the same is not supported by the evidence, is contrary to the evidence and against the weight thereof; on the further ground that the allowance of $5,000,000 for working capital is grossly excessive; and on the further ground that there is no evidence tending to support the finding that (p. 128)—

"The average working capital of plaintiff during the year 1923 was actually $10,184,975.63."

25. The Court erred in sustaining the report of the Special Master in finding marked "108" thereof as modified by the Court purporting to find the reproduction cost of the property owned by the plaintiff and devoted to the service of the consumers as of June 1, 1923, on the ground

that the cost and figures therein found are excessive and unreasonable, are not supported by the evidence, are contrary to the evidence and against the weight thereof; and for the further reasons set forth in these assignments of error, as to the various items thereof.

26. That said Court erred in confirming the report of the Special Master in Finding marked "109" on the ground that the figures contained therein are excessive and unreasonable, are not supported by the evidence, are contrary to the evidence and against the weight thereof; and [fol. 341] further upon the ground that the Findings of Fact and Conclusions of Law therein contained are not in accordance with the established principles of law involved; and for the further reason that the Court has given undue weight to the reproduction cost estimate; and for the further reasons set forth in these Assignments of Error, as to the specific items;

27. That said Court erred in confirming the report of the Special Master in Finding marked "110" on the ground that there was no competent evidence before the Master upon which any going concern value could be fixed; and on the further ground that there is no basis in the history of the company for making an allowance for going value whatsoever; and on the further ground that where property is valued, as here, as a going concern, there is no basis for an allowance of going value, even if the history of the company should support such allowance.

28. That said Court erred in confirming the report of the Special Master in Finding marked "111" insofar as he finds that (p. 130)—

"Plaintiff ought reasonably to have a reserve manufacturing plant capacity equal to 25% of its rated capacity,"

on the ground that it is not supported by the evidence, is contrary to the evidence and against the weight thereof. The reserve actually required varies with the progress of plant construction; the evidence shows it may safely be reduced to 10% and should never go above twenty-five per cent.

29. That said Court erred in confirming the report of the Special Master in Finding marked "117" on the ground that the same is not supported by the evidence, is contrary to the evidence and against the weight thereof.

[fol. 342] 30. That said Court erred in confirming the report of the Special Master in Finding marked "119" on the ground that the basis for the division of expenses is not supported by the evidence, is contrary to the evidence and against the weight thereof; and on the further ground that it appears that the allocations of services performed by the plaintiff and its subsidiaries are made with the purpose and with the intent of increasing operating and distributing costs of the plaintiff over what they should reasonably be, and placing upon plaintiff a larger measure of the burden of the expenses of the entire "Brooklyn Union System" than is fair and reasonable.

31. That said Court erred in confirming the report of the Special Master in Finding marked "120" on the ground that the basis for the division of expenses is not supported by the evidence, is contrary to the evidence and against the weight thereof; and furthermore, that it appears that the allocations of services performed by the plaintiff and its subsidiaries are made with the purpose and with the intent of increasing operating and distributing costs of the plaintiff over what they ought reasonably and actually be, and placing upon plaintiff a larger measure of the burden of the expenses of the entire "Brooklyn Union System" than is fair and reasonable.

32. That said Court erred in confirming the report of the Special Master in Finding marked "127" which says that—

"of such operating expenses 7.98% could be applied to the subsidiary companies during the first five months of 1924."

The Court should have found from the testimony that the percentages contained in said Finding marked "127" of the Master's report should be applied to the subsidiary companies during the first five months of 1924.

[fol. 343] 33. That said Court erred in confirming the report of the Special Master in Finding marked "129" on the ground that same is not supported by the evidence, is contrary to the evidence and against the weight thereof; and

for the further reason that the testimony clearly shows that the item is not covered in the allocation of expenses made to the subsidiary companies, and the percentages indicated should have been deducted from plaintiff's operating expenses.

34. That said Court erred in confirming the report of the Special Master in Finding marked "137" on the ground that the testimony shows that the amount of $89,401.62 should have been borne by the subsidiary companies for their share of the promotion expenses and $62,903.26 deducted from the plaintiff's operating expenses.

35. That said Court erred in confirming the report of the Special Master in Finding marked "138" which reads as follows:

"Subject to such alteration as would thereby be effected in the allocation of various expenses deemed to include those in question made early in each year based upon estimated expenses for the year covering the various items of operating cost,"

on the ground that the same is not supported by the evidence, is contrary to the evidence and against the weight thereof;

36. That said Court erred in confirming the report of the Special Master in Finding marked "139" on the ground that the same is not supported by the evidence, is contrary to the evidence and against the weight thereof; and upon the further ground that it was readily possible to determine the quantity of oil necessary to produce 650 British Thermal Unit gas under usual and ordinary conditions of temperature and atmospheric pressure.

[fol. 344] 37. That said Court erred in confirming the report of the Special Master in Finding marked "140" on the ground that same is not supported by the evidence, is contrary to the evidence and against the weight thereof.

38. That said Court erred in confirming the report of the Special Master in Finding marked "141" on the ground that the same is not supported by the evidence, is contrary to the evidence and against the weight thereof; and on the

further ground that the figures therein found are unreasonable and excessive.

39. That said Court erred in confirming the report of the Special Master in Finding marked "143" on the ground that the same is not supported by the evidence, is contrary to the evidence and against the weight thereof.

40. That said Court erred in confirming the report of the Special Master in Finding marked "147" on the ground that same is not supported by the evidence, is contrary to the evidence and against the weight thereof; and upon the further ground that the business department mentioned in said Findings does not and did not function for the purpose of "attaching" consumers. Appliances that are sold are sold at a profit and said profits are included in the operating revenue of the company. Development of new business is largely a natural process obtained without any appreciable cost for solicitation, advertising, attaching consumers, etc.

41. That said Court erred in confirming the report of the Special Master in Finding marked "154" on the ground that the same is not supported by the evidence, is contrary to the evidence and against the weight thereof; and on the further ground that the percentage allowed is unreasonable and excessive for the plaintiff; and on the further ground that the subsidiaries are not charged with a fair amount for unaccounted for gas. The amount for the plaintiff should be no more than five per cent for the reasons shown in Findings "149," "150," "151," "152" and "153" of the Master's report; and on the further ground that the cross-examination of witnesses developed the unreasonableness of the percentages herein found for unaccounted for gas.

[fol. 345] 42. That said Court erred in confirming the report of the Special Master in Finding marked "155" which reads:

"There is no evidence in the record showing or tending to show that the prices of material or the wages paid for labor on the whole will be reduced from the wages and price now being paid by the plaintiff,"

on the ground that the same is not supported by the evidence, is contrary to the evidence and against the weight

thereof, and contrary to the accepted opinions of economists; and further defendant excepts to that portion of said Finding which reads as follows:

"and the books of plaintiff show the net cost of gas made by plaintiff for its direct consumers,"

on the ground that the same is not supported by the evidence, is contrary to the evidence and against the weight thereof; and upon the further ground that the parent company is burdened with excessive miscellaneous items actually chargeable to the subsidiaries, and that the books of the company, therefore, do not accurately set forth the net cost of gas to its own consumers.

43. That said Court erred in confirming the report of the Special Master in Finding marked "160" on the ground that it is not supported by the evidence, is contrary to the evidence and against the weight thereof.

44. That said Court erred in confirming the report of the Special Master in Finding marked "163" on the ground that it is not supported by the evidence, is contrary to the evidence and against the weight thereof; and on the further grounds that the items for uncollectible bills are not proper charges to operating expenses for the reason that the law authorizes the plaintiff company to exact from its con- [fol. 346] sumers a reasonable amount in advance to cover two months' consumption of gas; if any loss is incurred therefor for uncollectibles, the said loss is due to the gross carelessness of the company and should not be charged as an operating expense.

45. That said Court erred in confirming the report of the Special Master in Finding marked "172" on the ground that the cost of gas made for the year 1922, as therein found, is unreasonable and excessive, is not supported by the evidence and against the weight thereof. The Court should have found that the reasonable cost for the manufacture of gas was not greater than the cost as found in Finding marked "166" of the Master's report, for the Metropolitan works or an average cost for the Metropolitan, Fulton, Williamsburg and Nassau works. He should further have found that the cost of repairs at the works and holder stations, as shown on the books, were unduly excessive and

should have been found in an amount approximating the average amounts for these items for the years 1918 to 1923, as appears in Finding marked "164" of the Master's report. He should have further used a figure for unaccounted for gas not in excess of five (5) per cent and should have deducted from operating expenses various amounts indicated by the testimony not to have been properly chargeable or really chargeable to subsidiary companies.

46. That said Court erred in confirming the report of the Special Master in Finding marked "173" on the ground that the costs of distribution and transmission for the year 1922 are unreasonable and excessive, are not supported by the evidence, are contrary to the evidence and against the weight thereof; and upon the further ground that the figures in said Findings referring to the costs of the distribution repairs and transmission repairs should have been found in an amount approximating the average cost of distribution and transmission repairs for the years 1918 to 1923, as found in Finding marked "165" of the Master's report. [fol. 347] The Court should have deducted from such distribution expenses various amounts indicated by the testimony not to have been properly chargeable or really chargeable to subsidiary companies.

47. That said Court erred in confirming the report of the Special Master in Finding marked "174" on the ground that the figures therein found for total commercial expenses for the year 1922 are excessive and unreasonable, are not supported by the evidence and against the weight thereof; and upon the further ground that the said total commercial expenses of the plaintiff company are burdened by reason of an improper allocation of expense as between the plaintiff company and its subsidiaries. The Court should have deducted from such commercial expenses various amounts indicated by the testimony not to have been properly chargeable or really chargeable to subsidiary companies.

48. That said Court erred in confirming the report of the Special Master in Finding marked "175" on the ground that the figures therein found for total general and miscellaneous expenses for the year 1922 are excessive and unreasonable, are not supported by the evidence and against the weight

thereof; and upon the further ground that the said total general and miscellaneous expenses of the plaintiff company are burdened by reason of an improper allocation of expense as between the plaintiff company and its subsidiaries; and upon the further ground that an item for uncollectible bills for gas appears in said Finding. Said item should be excluded for the reasons hereinbefore set forth in these Assignments of Error. The Court should have deducted various items indicated by the testimony not to have been properly chargeable but really chargeable to subsidiary companies.

49. That said Court erred in confirming the report of the Special Master in Finding marked "176" on the ground that the figures therein found for taxes assignable to the gas operations of the plaintiff company for the year 1922 are [fol. 348] excessive and unreasonable, are not supported by the evidence, are contrary to the evidence and against the weight thereof. Certain of these taxes are not based upon a dollar rate and are therefore not applicable in this proceeding.

50. That said Court erred in confirming the report of the Special Master in Finding marked "177" on the ground that the cost of gas made for the year 1923, as therein found, is unreasonable and excessive, is not supported by the evidence and against the weight thereof. The Court should have found that the reasonable cost for the manufacture of gas was not greater than the cost as found in the Finding marked "166" of the Master's report, for the Metropolitan Works or an average of the several works as set forth in Assignment No. 45 herein. It should further have been found that the cost of repairs at the works and holder stations, as shown on the books, were unduly excessive and should have been found in an amount approximating the average amounts for these items for the years 1918 to 1923, as appears in Finding marked "164" of the Master's report. He should further have used a figure for unaccounted for gas not in excess of five (5) per cent and should have deducted from operating expenses various amounts indicated by the testimony not to have been properly chargeable but really chargeable to subsidiary companies.

51. That said Court erred in confirming the report of the Special Master in Finding marked "178" on the ground that the cost of distribution and transmission for the year 1923 are unreasonable and excessive, are not supported by the evidence, are contrary to the evidence and against the weight thereof; and upon the further ground that the figures in said findings referring to the costs of distribution repairs and transmission repairs should have been found in an amount approximating the average cost of distribution and transmission repairs for the years 1918 to 1923, as found in Finding marked "165" of the Master's report. The Court [fol. 349] should have deducted from such distribution expenses various amounts indicated by the testimony not to have been properly chargeable but really chargeable to subsidiary companies.

52. That said Court erred in confirming the report of the Special Master in Finding marked "179" on the ground that the figures therein found for total commercial expenses for the year 1923 are excessive and unreasonable, are not supported by the evidence, are contrary to the evidence and against the weight thereof; and upon the further ground that the said total commercial expenses of the plaintiff company are burdened by reason of an improper allocation of expense as between the plaintiff company and its subsidiaries. The Court should have deducted from such commercial expenses various amounts indicated by the testimony not to have been properly chargeable but really chargeable to subsidiary companies.

53. That said Court erred in confirming the report of the Special Master in Finding marked "180" on the ground that the figures therein found for total general and miscellaneous expenses for the year 1923 are excessive and unreasonable, are not supported by the evidence and against the weight thereof; and upon the further ground that the total general and miscellaneous expenses of the plaintiff company are burdened by reason of an improper allocation of expenses as between the plaintiff company and its subsidiaries; and upon the further ground that an item for uncollectible gas bills appears in said Finding. Said item should be excluded for the reasons hereinbefore set forth in these Assignments of Error and upon the further

ground that the Court should have found that many of the items included in its calculation of total general and miscellaneous expenses should have been eliminated entirely as unreasonable, excessive and extraordinary, and therefore not to be considered in a rate proceeding.

[fol. 350] 54. That said Court erred in confirming the report of the Special Master in Finding marked "181" on the ground that the figures therein found for taxes assignable to the gas operations of the plaintiff company for the year 1923 are excessive and unreasonable, are not supported by the evidence, are contrary to the evidence and against the weight thereof. Certain of these taxes are not based upon a dollar rate and are therefor- not applicable in this proceeding.

55. That said Court erred in confirming the report of the Special Master in Finding marked "182" wherein the total revenues for 1922 are found, on the ground that the same is not supported by the evidence, is contrary to the evidence and against the weight thereof; and on the further ground that the sales to the city of New York should not be included in the calculation of revenues.

56. That said Court erred in confirming the report of the Special Master in Finding marked "183" wherein the total revenues for 1923 are found, on the ground that the same is not supported by the evidence, is contrary to the evidence and against the weight thereof; and on the further ground that the sales to the city of New York should not be included in the calculation of revenues.

57. That said Court erred in confirming the report of the Special Master in Finding marked "184" wherein the operating revenues and expenses of the plaintiff company for the year 1922 are summarized, on the ground that the figures for expenses therein contained are excessive and unreasonable, are not supported by the evidence and against the weight thereof; and on the further grounds hereinbefore set forth in these Assignments of Error.

58. That said Court erred in confirming the report of the Special Master in Finding marked "185" wherein the operating revenues and expenses of the plaintiff for the year 1923 are summarized, on the ground that the figures for

[fol. 351] expenses therein contained are excessive and unreasonable, are not supported by the evidence are contrary to the evidence and against the weight thereof; and upon the further grounds hereinbefore set forth in these Assignments of error.

59. That said Court erred in confirming the report of the Special Master in Finding marked "186" on the ground that the average quantities of gas oil and generator fuel therein contained for both the years 1922 and 1923 are unreasonable and excessive, are contrary to the evidence, not supported by the evidence and against the weight thereof; furthermore, the difference in the cost to furnish gas of a 650 B. T. U. standard for both the years 1922 and 1923 is excessive and unreasonable.

60. That said Court erred in confirming the report of the Special Master in Finding marked "187" wherein the net operating revenue for the year 1923, under the conditions prescribed by chapter 899 of the laws of 1923, is found, on the ground that the basic figures upon which this calculation is made are not supported by the evidence, are contrary to the evidence and against the weight thereof; and for the further reasons heretofore set forth in these Assignments of Error covering matters of operating revenue, operating expenses, etc., for the year 1922.

61. That said Court erred in confirming the report of the Special Master in Finding marked "188" wherein the net operating revenue for the year 1923, under the conditions prescribed by chapter 899 of the laws of 1923, is found, on the ground that the basic figures upon which this calculation is made are not supported by the evidence, are contrary to the evidence and against the weight thereof; and for the further reasons heretofore set forth in these Assignments of Error, covering matters of operating revenue, operating expenses, etc., for the year 1923.

[fol. 352] 62. That said Court erred in confirming the report of the Special Master in Finding marked "189" wherein a certain alleged yield is found on the so-called fair value of the plaintiff's property for the year 1922, on the ground that the same is not supported by the evidence, is contrary to the evidence and against the weight thereof; and that the basic figures upon which these calculations are

made are incorrect for the reasons hereinbefore set forth in these Assignments of Error.

63. That said Court erred in confirming the report of the Special Master in Finding marked "190" wherein a certain alleged yield is found on the so-called fair value of the plaintiff's property for the year 1923, on the ground that the same is not supported by the evidence, is contrary to the evidence and against the weight thereof; and that the basic figures upon which these calculations are made are incorrect for the reasons hereinbefore set forth in these Assignments of Error.

64. That said Court erred in confirming the report of the Special Master in Finding marked "191" wherein an alleged percentage yield upon the so-called fair value of the plaintiff's property is found as of June 1923, on the ground that the same is not supported by the evidence, is contrary to the evidence and against the weight thereof; furthermore, that the calculations are based upon figures that are incorrect for the reasons hereinbefore set forth previously in these Assignments of Error, covering cost of making gas, net income from the sale of gas, fair value of plaintiff's property, etc.; furthermore, the Court erred in confirming said Finding as to the yield to the plaintiff company on December 31, 1923, for the same reasons hereinbefore set forth; furthermore, the Court erred in confirming said Finding as to the so-called percentage yield upon the basis of making and distributing 587 B. T. U. gas for the same reasons hereinbefore set forth in this assignment; furthermore, the Court erred in confirming said Finding as to the so-called yield for making and distributing [fol. 353] gas of 537 B. t. u. for the same reasons hereinbefore set forth in this assignment;

65. That said Court erred in confirming the report of the Special Master in Finding marked "192" which finds that the statute in question is confiscatory, on the ground that the same is not supported by the evidence, is contrary to the evidence and against the weight thereof; and for the further reasons hereinbefore set forth in these Assignments of Error.

66. That said Court erred in confirming the report of the Special Master in Finding marked "193" which purports

to find that the reasonable and proper rate of return is not less than 8 per cent., on the ground that the same is not supported by the evidence, is contrary to the evidence and against the weight thereof; and furthermore, is contrary to the law and disregards the decisions of the Supreme Court of the United States in the Consolidated Gas Company case and in the cases of other similarly situated companies; and furthermore, that it was neither the duty nor the province of the Master or the Court to find what the reasonable and proper rate of return should be.

67. The Court erred in following the recommendations of the Master numbered "3", "4", "5", "6" and "7", on the ground that they are not supported by the evidence, are contrary to the evidence and against the weight thereof; are contrary to the law involved and for the further reasons hereinbefore more specifically set forth in these Assignments of Error.

68. The Court erred in sustaining the opinion of the Master, this defendant repeating and reiterating, as though herein set forth, any and all of the defendants' Assignments of Error to the final decree herein sustaining the Master's Findings of Fact and Conclusions of Law as may apply to the statements in said opinion or the opinion of the Court herein identical with or similar to or bearing [fol. 354] upon such Findings of Fact and Conclusions of Law.

69. That said Court erred in confirming so much of the opinion of the Special Master as holds that it was not necessary for plaintiff to actually operate under the statute in question before bringing this suit. The Court should have held that the Company should have reduced its rate to that fixed in the statute on the day such statute went into force and should have complied with the standard provisions of such statute as soon thereafter as practicable.

70. That said Court erred in confirming so much of the Master's opinion as purports to calculate the cost of the properties of the plaintiff company, on the ground that the figures therein contained are excessive and unreasonable, are contrary to the evidence, unsupported by the evidence, and against the weight thereof. The Court should have found, as testified by an officer of the plaintiff before the

Stevens Investigating Committee in 1905, that many millions in the figures appearing in the opening entries in plaintiff's books represented arbitrary valuations of franchises, going value, good will, and other intangibles, and other fictitious items, supposed to be transferred by the vendor companies to the plaintiff and that the actual cost of the physical properties transferred to the plaintiff company in 1895 was not in excess of $15,000,000.

71. That said Court erred in confirming so much of the opinion of the Special Master as reads as follows:

"Upon cross examination, there was a suggestion in the form of questions propounded to the witness to the effect that while Mr. Burt's valuation was as of June 1st, 1923, the plaintiff had, as a matter of fact, between June 1 and December 31, 1923, spent approximately $7,000 in repairs upon the buildings 1116 and 1124 Fulton Street (page [fol. 355] 2170) and substantially a like amount upon repairs to the building 176, Remsen Street (page 2172), although the witness had testified that the latter building required an expenditure of only $380 (Plaintiff's Exhibit 172). Whether or not such expenditures as were those suggested by the questions were as matter of fact incurred by the plaintiff, does not specifically appear, except from an examination of plaintiff's books of account in evidence. These books do not sustain the suggestion embodied in the questions, although they indicate that repairs were made subsequent to June 1st, 1923,"

on the ground that the statement "whether or not such expenditures as were thus suggested by the questions were as a matter of fact incurred by the plaintiff, does not specifically appear, except from an examination of plaintiff's books of account in evidence. These books do not sustain the suggestion embodied in the questions," is directly contrary to the facts and the evidence, said books and records, showing specifically that such repairs were made.

72. That said Court erred in confirming so much of the opinion of the Master as holds that there should be no deduction from the reproduction cost or fair value of plaintiff's services, on account of the large proportion of such services actually paid for by the consumers of the plaintiff

company and its predecessors, on the ground that said conclusion of law is contrary to the fundamental principles of law and equity.

73. That said Court erred in confirming so much of the opinion of the Special Master as appears under the title "Contingency Account" on the ground that the conclusions therein stated are contrary to the settled principles of law and equity.

[fol. 356] 74. That said Court erred in confirming so much of the opinion of the Special Master as appears under the title, "Construction of Statute" on the ground that the conclusions therein stated place a construction on the said statute which is erroneous and contrary to settled principles of law and equity. The Court should have found that the plaintiff company under the statute should have complied with the 650 B. t. u. standard within a reasonable time and such compliance would not have involved any menace to either life or property. The Court should in addition have interpreted the statute so as to require the plaintiff company to supply gas of 650 British thermal unit standard at the City Testing Stations and not at the consumers' premises. Furthermore, the Court should have found that it was not commercially impossible for the company to supply such a standard at the city Testing Stations within a reasonable time after June 2, 1923, and further that such a standard of gas, so supplied, would have resulted in a substantial benefit to the plaintiff's consumers.

75. That said Court erred in adjudging in the final decree herein:

"Plaintiff's exception IV to finding numbered 70 in the report of the Special Master filed here in March 21, 1925 is sustained,"

for the reasons hereinbefore set forth in these Assignments of Error.

76. That said Court erred in adjudging in the final decree herein:

"The other exceptions filed herein by the plaintiff and by the respective defendants are severally overruled, ex-

cept to the extent and in the respects indicated in the opinion of Campbell, D. J., filed herein June 24, 1925,"

for the reasons hereinbefore set forth in these Assignments of Error.

77. That said Court erred in adjudging in the final decree herein that the reproduction cost of the plaintiff property [fol. 357] as of June 1st, 1923 is $57,302,786, for the reasons hereinbefore set forth in these Assignments of Error.

78. That said Court erred in adjudging in the final decree as follows:

"The report and opinion of the Special Master filed herein March 21, 1925 are hereby confirmed except in the respects and to the extent indicated above,"

on the ground that said judgment is contrary to the law, contrary to the evidence and against the weight thereof, and further upon all the grounds set forth in these Assignments of Error.

79. That said Court erred in adjudging in its final decree as follows:

"A maximum rate of $1.00 per thousand cubic feet of gas sold by the plaintiff, in conjunction with or apart from the standard of 650 minimum British thermal units per cubic foot, is illegal and void, because in contravention of Section 1 of Article 14 of the Articles in addition to and amendment of the Constitution of the United States of America; and the provisions of Chapter 480 of the Laws of 1910 of the State of New York, known as the Public Service Commission Law, as amended and supplemented, and of Chapter 899 of the Laws of 1923, in so far as they prohibit the plaintiff from charging or receiving for gas manufactured and sold in the City of New York, a sum per one thousand cubic feet, in excess of the rate of one dollar per thousand cubic feet, in conjunction with or apart from the said standard, are each likewise illegal and void,"

on the ground that the said judgment is contrary to the law, against the weight of evidence, contrary to the evidence and has no evidence to support it and further upon all the grounds set forth in these Assignments of Error.

80. That said Court erred in adjudging in its final decree as follows:

"A standard of gas, required to be furnished by the plaintiff, of not less than 650 British thermal units per cubic foot, in conjunction with a rate not exceeding $1.00 per thousand cubic feet of gas, is likewise illegal and void; and the provisions of the said Chapter 480 of the Laws of 1910, as amended and supplemented and of Chapter 899 of [fol. 358] the Laws of 1923, in so far as they prohibit the plaintiff from furnishing gas of a standard less than 650 British thermal units per cubic foot, measured under normal conditions of temperature and atmospheric pressure, in conjunction with the rate prescribed thereby, are likewise illegal and void,"

for the reason that the said judgment is contrary to the law, contrary to the evidence and against the weight thereof, and further for all the reasons set forth in these Assignments of Error.

81. That said Court erred in adjudging in its final decree as follows:

"The provisions of Chapter 480 of the Laws of 1919, as amended and sup-lemented, and of Chapter 899 of the Laws of 1923, in so far as they prohibited or prohibit the plaintiff from furnishing gas of a standard less than 650 British thermal units per cubic foot, without affording the plaintiff an opportunity and a reasonable time within which to make, or to have its consumers make such readjustment of and changes in the gas appliances of the consumers as might be necessary in order to adapt them for the safe and efficient use of gas of such standard and to protect the consuming public against the very obvious and serious dangers to human life and property, or in so far as they denied to the plaintiff a safe and adequate judicial review of the legality thereof without incurring the penalties provided by the said statutes, are likewise illegal and void,"

upon the ground that the said judgment is contrary to the law, contrary to the evidence and against the weight thereof and further for all the reasons set forth in these Assignments of Error.

82. That said Court erred in adjudging in its final decree as follows:

"The said Chapter 480 of the Laws of 1919, as amended and supplemented, or any other provisions of law, or any regulation prescribed thereunder, in so far as it prohibits the plaintiff from putting into effect forthwith a rate or rates for gas distributed or sold by it which will afford to it just compensation therefor, is likewise illegal and void,"

[fol. 359] on the ground that the said judgment is contrary to the law, contrary to the evidence and against the weight thereof and for the further reasons set forth in these Assignments of Error and further upon the ground that said judgment proceeds far beyond the issues and necessities of the cause herein, in that it makes a judgment in regard to laws and regulations not before the Court.

83. That said Court erred in adjudging in the final decree as follows:

"The plaintiff has no adequate remedy at law for the injury which will result from the enforcement of said acts, and such injury will be irreparable,"

on the ground that said judgment is contrary to the law, contrary to the evidence and against the weight thereof and for the further reasons hereinbefore set forth in these Assignments of Error.

84. That said Court erred in adjudging in its final decree that the Defendant be restrained from enforcing or attempting to enforce the statute herein in controversy as set forth in paragraph marked, "10" of the final decree herein, for the reason that said judgment is contrary to the law, contrary to the evidence and against the weight thereof and for the further reasons hereinbefore set forth in these Assignments of Error.

85. That said Court erred in decreeing in its final decree as follows:

"The plaintiff shall recover its taxable costs and disbursements of the defendants, including the sum fixed and allowed as the compensation of the Special Master herein

and his necessary disbursements, to be equally borne and paid by the defendants, in accordance with the rules of the Supreme Court of the United States on this subject,"

on the ground that said judgment is contrary to the law, contrary to the evidence and against the weight thereof and for all the reasons hereinbefore set forth in these Assignments of Error.

[fol. 360] 86. The said Court erred in holding that it was not necessary for the Plaintiff to experiment under the statute before bringing the suit at bar and in so much of its opinion as states:

"Reluctant as any court should be to declare a statute of this character confiscatory until it has been demonstrated so to be during a test period, I am of the opinion that plaintiff in the action at bar has brought itself within the exception to the general rule which is laid down in Willcox v. Consolidated Gas Co., supra,"

for the reason that the said finding is contrary to law and to the evidence.

87. The said Court erred in finding in its opinion in regard to the original cost of the property as follows:

"Original cost to the vendor companies was not shown notwithstanding the industrious efforts of the plaintiff supplemented by the efforts of the defendants, and in my opinion it is incapable of proof." * * *

"The transaction between the plaintiff and the vendor companies was not a consolidation nor a merger but a simple purchase preceded by negotiations, and I see no reason to believe that the plaintiff paid to the vendor companies more than it considered a fair price for their assets." * * *

"I agree with the Master's statement that an analysis of the books of the plaintiff would indicate (though not establish) the net cost of the physical properties, including the Equity Gas Works, and excluding the property utilized by the subsidiaries on June 1, 1923 was $38,517,199.94,"

for the reason that said findings are contrary to the evidence and against the weight thereof. While the actual original cost of construction of the properties transferred

to the Plaintiff Company by the vendor companies was not ascertainable in detail, yet, the methods of keeping the books of the vendor companies together with the transactions at the time of the transfer of the properties and the testimony given in 1905, by the witness Staniford indicate conclusively that the cost of the properties, so taken over, was not more than $15,000,000 without deduction for depreciation and the total original cost of all of the Plain-
[fol. 361] tiff's properties did not exceed $25,000,000, without deduction for depreciation as of December 31, 1923.

88. The said Court erred in holding in its opinion—

"By stipulation the withdrawals from fixed capital between November 4, 1895 and December 31, 1908 were fixed at $4,000,000,"

for the reason that the said finding is contrary to the evidence as is shown by the record. Plaintiff conceded that $4,000,000 of property was withdrawn without any entry on the books. Defendants did not concede that this was all that was withdrawn so irregularly.

89. The said Court erred in holding in its opinion that no deduction should be made for depreciation inasmuch as the Defendants offered no testimony as to the exact amount of such depreciation and in so much of its opinion in regard to depreciation as reads as follows:

"The defendants now claim that the Master erred in not making deductions for depreciation as to the several items making up the cost of replacement, but I cannot agree with them, because if they desired such a finding, the defendants, with the large corps of experts under their control, could have easily shown the fact, if such it be, and the basis on which depreciation should be figured, and having failed to make any such showing, they cannot complain because the Master failed to make such findings, as it appears to me that in his finding of a fair value much lower than the cost of replacement as found by him, he must have made all the allowance for depreciation that was warranted by the evidence."

The Master nowhere states in his opinion that he made deduction for depreciation and his slight variations from re-

production cost new in finding a value of the property cannot be assumed to be based upon the consideration of depreciation. The Court should therefore have made an adequate deduction for the depreciation existing in this plant and shown by the cross-examination by Plaintiff's witnesses to exist.

90. The said Court erred in so much of its opinion as held as follows:

"The amount for repaving under the item for 'Services' [fol. 362] was not for replacing paving for the whole system, nor in any cases where no pavement existed at the time, or where an improved pavement had been laid since the services were originally installed, but the witness testified that it was the same kind of pavements which were cut and replaced when the services were originally installed."

The Court erred in confirming the Master in his allowance for paving over mains and services, for the reason that there was no proper proof of the actual cost of such re-paving as actually occurred in the construction of Plaintiff's system.

91. The Court erred in so much of its opinion as reads as follows:

"No finding deducting anything from the item for Services when the same were laid on the consumers' property inside the building line can be based on the fact that some consumers had contributed an amount which was not definitely shown on account of the whole expense of installing services, because that would not be a proper deduction, the only deduction that could properly be made would be the value of the property, if any, included in that item which belonged to the consumers, and no testimony was offered to prove that title to any was in the consumer. The testimony shows that all replacements of services were made at the expense of the company, and there is no proof of their intention to give them to the consumer when they were laid on the consumers property at his invitation and with his license."

A court of Equity in a litigation of this character should hold that where the consumers have paid the cost of con-

struction of part of Plaintiff's property, the Plaintiff is not entitled to receive a return upon this property nor should a statute be declared confiscatory because it does not receive such return. The Court should have made a substantial deduction from the item of Services on account of the consumers' contributions.

92. The Court erred in holding in its opinion that the Plaintiff did not concede the admissability of the assessed values in its real property and that such assessed values were not a safe guide as to the value of such property. The concession of the Plaintiff on the record was understood [fol. 363] both by counsel for the Defendants and by the Master as a concession of such assessed valuations and such assessed values should have been considered by the Court together with the other evidence in the case.

93. The said Court erred in confirming in its opinion the Master's findings of $57,302,786 reproduction value of the Plaintiff's property, $38,517,199.14 as the original cost "indicated by analysis of the books of the company," $46,149,133.33 as the book value and $46,500,000 as the capitalization of the Plaintiff, such figures being calculated by the Court upon various bases which this defendant deems improper, unreasonable and excessive, for all the reasons stated in the previous Assignments of Error to the Master's findings on the same subject matter.

94. The said Court erred in so much of its opinion as reads as follows:

"Original cost in this instance is at best but an estimate and cannot be a fair measure of value because it is too remote, and it does not seem to me that reproduction cost, as found, can be the fair value of the property, because no one would purchase physical property of the age of this property at the same price they would pay for new; therefore, taking into consideration all the elements which must be considered (Smyth v. Ames, supra, Georgia Railway & Power Co., v. Railway Commission of Georgia, supra, and Bluefield Land & Water Co., v. Commission, supra), I agree with the Master that the fair value of these properties can be fixed at $50,000,000, as of June 1, 1923,

for all the reasons set forth in prior Assignments of Error as to the Master's finding of $50,000,000 as a fair value of Plaintiff's properties as of June 1, 1923. The Court is further in error in its statement inasmuch as it states that by reason of the age of this property it is not as good as [fol. 364] new and further specifically refuses to be guided by the cost of reproduction and yet reduces its finding and cost of reproduction by only $7,000,000. The Court in effect ignores the original cost of construction of Plaintiff's property in arriving at this figure, $50,000,000 and in so doing runs contrary to established law.

95. The said Court erred in so much of its opinion as reads as follows:

"I am of the opinion that there is a going value of the property of the plaintiff, and while it may be greater, I do not feel that on the evidence offered in the case at bar it could be fixed at any specific sum, and if there was something for going value included in the price paid by the plaintiff, in its stocks and bonds, to the vendor corporations in November, 1895, it is more than covered in this amount. Therefore, it seems to me that the Master was right in eliminating any allowance for going value in the case at bar, in ascertaining reproduction cost or in adopting a rate base, and I shall follow that course in the belief that by so doing the rate base as found by me, is established beyond a reasonable doubt."

While the wording of this portion of the opinion is not clear, it would seem to indicate that the Court believes that something might be added to value of the Plaintiff's property by reason of what is known as "going value." In this the Court erred in that there is nothing in the history of the Plaintiff company or in the evidence presented in this case to warrant the finding that any amount under any circumstances could ever be added to the value of Plaintiff's property to represent "going value."

96. The said Court erred in confirming the Master in his allowance of $5,000,000 for working capital, for all the reasons hereinabove set forth in our previous Assignments of Error as to the Master's allowance of working capital.

97. The said Court erred in so much of its opinion as holds as follows:

[fol. 365] "The relations between the plaintiff and its subsidiaries and their methods of fixing the prices to be paid by the subsidiaries are not properly subject to criticism. The difference between the amount of gas that had been served during the year, as found by a calculation at the close of the year, and the amount estimated at the beginning of the year as the amount that would be required, was too small to justify recasting the system of accounting, and I see no reason for requiring it,"

for the reason that the said conclusions are contrary to the evidence and the weight thereof and for all the reasons herein set forth in our previous Assignments of Error to the Court's confirmation of the Master's various findings on this subject. The Court should have found what it actually cost the Plaintiff to make the gas which it sold and not what some arbitrary method of allocation showed that cost to be.

98. The said Court erred in refusing to sustain the contention of the Defendants that the operating cost of the Plaintiff should be judged upon the results obtained at the plants of the plaintiff operating upon a normally efficient basis and particularly in so much of its opinion as leads up to the following conclusion:

"I can see no reason or justice in establishing one or a number of them as a standard, or in refusing to base the cost of operation on the cost of producing the entire amount of gas sold by the plaintiff, no matter where manufactured,"

for all the reasons herein above set forth in these Assignments of Error relating to the Court's confirmation of the Master's findings on this subject.

99. The said Court erred in so much of its opinion as reads as follows:

"I agree with the Master that the books and records of the company are properly kept, and the plants are efficiently operated, and the plaintiff offered evidence to show the actual results of operation for 1922 and 1923,"

[fol. 366] for all the reasons hereinabove set forth in these Assignments of Error directed to the Court's confirmation of the Master's findings and conclusions in this regard and for the further reason that the said conclusion of the Court is contrary to the law and contrary to the evidence.

100. The said Court erred in so much of its opinion as reads as follows:

"To calculate repairs on the basis of the average for five years shows but a negligible difference from a calculation as made by the plaintiff, but it might properly entail a consideration of varying costs of material and labor without producing a result which would be as nearly accurate as that which was made by the plaintiff and approved by the Master, as the evidence shows that we may reasonably assume that present prices will continue for some time. I therefore approve of the method pursued as proper,"

for all the reasons hereinabove set forth in the various Assignments of Error directed to the Court's confirmation of the Master's findings in this regard.

101. The said Court erred in failing to reduce unaccounted for gas to the figure of 5% as contended for by the Defendants, for all the reasons hereinabove set forth in the various Assignments of Error directed to the confirmation by the Court of the Master's finding in this regard.

102. The said Court erred in confirming the Master's allowance of gross earnings tax at $105,635.33 for the reason that the proper figure is $81,481.33 calculated as it should be on furnishing gas at $1.00 per thousand cubic feet.

103. The said Court erred in refusing to find that the cost of making distributing gas should not have exceeded $.7796 per thousand cubic feet sold, as contended for by this Defendant, for all reasons hereinabove set forth in the various Assignments of Error directed to the confirmation by the Court of the Master's findings in respect to the cost of production and to the cost of distribution of gas.

[fol. 367] 104. The said Court erred in so much of its opinion as reads as follows:

"The principal points of objection taken by the Attorney General to the evidence of cost of manufacture and distribution offered by the plaintiff, namely, that the cost of operation should not be based on the costs of all the plants but on that of four of the plants which he deems the most efficient, that unaccounted for gas should not be allowed on the basis of experience of the company but at an arbitrary figure of 5%, and as to gross earnings taxes, have already been discussed and decided.

The miscellaneous objections seem to have been considered and properly determined by the Master, and but one of them need be mentioned.

Some years ago a holder was built on the lands of and in the name of The Newtown Gas Company. Plaintiff loaned the Newtown Gas Company all of the money to build the same, and charges The Newtown Gas Company 6% interest for said loan. The plaintiff uses the holder which it mainstains and pays 6% for its use.

This transaction does not present to my mind anything requiring correction, especially when you consider the statement from the contrary for the defendant Attorney General, that The Newtown Gas Company had no need of such holder from which I understand that it was built for the use of plaintiff, the tenant, but it simply represents the established difference between interest rates and rental value economically figured,"

for the reason that the same is contrary to the evidence and contrary to the law. The method used by the Plaintiff Company in this connection was plainly for the simple purpose of exaggerating its production expenses and the Court should have so found.

105. The said Court erred in confirming specifically the Master's finding as to the cost of making and distributing gas during the years 1922, 1923 and 1924 and the return that would be obtained thereon by the plaintiff on the value [fol. 368] of its property, for all reasons hereinabove set forth in the various Assignments of Error, directed to the confirmation by the Court of the Master's findings in these respects.

106. The said Court erred in confirming the Master's finding that the Plaintiff is entitled to 8% return upon its

property for all the reasons hereinabove set forth in previous Assignments of Error directed to the confirmation by the Court of the Master's report and findings in this particular.

107. The said Court erred in so much of its opinion leading up to and including the following conclusion:

"Chapter 899 of the Laws of New York 1923, as worded, is not separable into parts, but in its entirety violates Section 1 of Article 14 of the Federal Constitution,"

for all the reasons herein above stated in previous Assignments of Error directed to the confirmation by the Court of the Master's findings in this respect. The Court should have held that the statute, properly construed, required that plaintiff should furnish 650 British Thermal Unit Gas within a reasonable time after the coming into effect of the statute and that such gas should be tested as to thermal content at the testing stations provided by law. It should further have found that the rate fixed by the statute in conjunction with such standard of gas so tested was valid and constitutional. It should further have found that the furnishing of such gas would not have been dangerous but would have been beneficial to the consumers in that they would obtain more heat units for the same rate per thousand. It should further have found that the statute was and is severable and even if the Court found the standard fixed in the statute to be unconstitutional in and of itself it should have held that the rate fixed continued valid and that the Public Service Commission still had the power to fix the standard of the gas to be furnished and that the rate fixed by the statute in conjunction with the standard of gas actually furnished by plaintiff or in [fols. 369 & 370] conjunction with a standard of 537 British Thermal Units formerly fixed by the Public Service Commission would be constitutional and enable plaintiff to earn a fair return upon the fair value of its property.

Albert Ottinger, Attorney-General of the State of New York. John Holley Clark, Jr., Solicitor for Defendant Ottinger, 51 Chambers Street, New York City, New York. John Holley Clark, Jr., Charles E. Buchner, of Counsel.

Dated September 1st, 1925.

[fol. 371] IN UNITED STATES DISTRICT COURT

[Title omitted]

PETITION FOR APPEAL—August 29, 1925

The petition of Albert Ottinger, as Attorney-General of the State of New York, respectfully shows to this court:

(1) That Albert Ottinger is the Attorney-General of the State of New York and one of the defendants in this action.

(2) That this is a suit in equity to have declared unconstitutional chapter 899 of the laws of 1923 of the State of New York, on the ground that the rate and quality for gas fixed therein are confiscatory and unconstitutional.

(3) The issues herein were referred to a Special Master and tried before said Special Master. The trial began on or about the 4th day of December, 1923, and continued to on or about the 20th day of July, 1924. The testimony before said Special Master consisted of approximately 6000 printed pages and about 500 exhibits.

[fol. 372] (4) The Special Master's report was filed in the office of the clerk of the District Court on or about the 23rd day of March, 1925. The defendant, Albert Ottinger, duly filed exceptions to the Special Master's report in the office of the clerk of the United States District Court.

(5) Thereafter the exceptions to the Special Master's report duly came on to be heard before the District Court of the United States, Eastern District, (Judge Marcus B. Campbell sitting). The final decree of the District Court was filed in the office of the clerk of the United States District Court for the Eastern District of New York on the 3rd day of August, 1925.

(6) That in substance the decree restrains the defendants from enforcing in any way chapter 899 of the laws of 1923 of the State of New York, and declares that said statute violates or is in contravention of section 10 of article 1 and of the Fourteenth Amendment of the Constitution of the United States.

(7) The above named defendant, Albert Ottinger, as Attorney-General of the State of New York, feeling ag-

grieved by the aforesaid decree entered on the 3rd day of August, 1925, does hereby appeal from said decree to the Supreme Court of the United States for the reasons set forth in the Assignment of Error herewith filed and prays that his appeal will be allowed and citation issue as provided by law, and that a transcript of the record of proceedings and documents, upon which said decree was based duly authenticated, be sent to the United States Supreme Court at Washington, District of Columbia, under [fols. 373 & 374] the rules and regulations of such court as made and provided, and your petitioner prays that an order be made dispensing with security.

(Signed.) Albert Ottinger, Attorney-General of the State of New York. John Holley Clark, Jr., Solicitor for Albert Ottinger, as Attorney-General of the State of New York.

Office and P. O. address: 49 Chambers Street Borough of Manhattan, City of New York, N. Y.

Dated New York, August 29th, 1925.

Duly sworn to by Albert Ottinger. Jurat omitted in printing.

[fols. 375 & 376] Citation, in usual form, omitted in printing.

[fol. 377] In United States District Court

[Title omitted]

Statement of Evidence

Brooklyn, N. Y., December 10, 1923.

Before Almet R. Latson, Special Master

Colloquy Between Master and Counsel

Mr. Cummings: If the Court please, I move to dismiss the bill of complaint on behalf of the Attorney General on the following grounds:

First, that the bill of complaint fails to state facts which are sufficient to constitute a cause of action, but many of them are mere conclusions and not statements of fact. There is no allegation in the complaint that the company has experimented with the rate or with the standard of quality as fixed by this law, and according to the well settled rule of law, experimentation must be first had, unless the rate upon its face is clearly confiscatory.

FREDERICK R. WOGAN

Mr. Cummings: May it be understood that when one defendant takes exception it will inure to the benefit of all the other defendants?

Mr. Dykman: I have no objection.

The Master: It is so ordered.

Direct examination by Mr. J. A. Dykman:

I am Assistant Secretary of the Brooklyn Union Gas [fol. 378] Company. I first went into the Fulton Municipal Gas Company in 1892, holding a position as stenographer. I became secretary to the president of that company, General James Jourdan, and kept that position until that company was taken over by the Brooklyn Union Gas Company. After the Brooklyn Union Gas Company was in existence, General Jourdan became president and he made me his secretary and I remained secretary to the president until 1910, I think October, when I became assistant secretary of the company. Certificate of incorporation of the Brooklyn Union Gas Company offered and received as Plaintiff's Exhibit No. 1.

I produce from the files of the company "Record of the Brooklyn Union Gas Company, minutes of a meeting of the Directors held September 10, 1895; minutes of a meeting held September 30, 1895 (Plaintiff's Exhibit 3 for identification); minutes of a meeting held October 2, 1895 [fol. 379] (Plaintiff's Exhibit 4 for identification.); minutes of a meeting held October 19, 1895; (Plaintiff's Exhibit 5 for identification); minutes of a meeting held November 1, 1895 (Plaintiff's Exhibit 6 for identification)," and that is the signature of Charles E. Ball, assistant secretary.

Minutes offered by plaintiff.

I had the custody of the book. I did not have anything to do with the keeping of the minutes, at the time the minutes were entered in those books. I do not know anything whatsoever about their accuracy. I believe Mr. Ball, who signed those, is dead.

The Master: Objection to Exhibit 2 is sustained, exception to plaintiff.

The Master: The objection is sustained to exhibit 3, the meeting of September 30th. Exception to plaintiff.

[fol. 380] The Master: Objection sustained to Plaintiff's Exhibit No. 4.

Exception to plaintiff. Marked Exhibit 4 for identification.

The Master: Objection sustained to Plaintiff's Exhibit 5.

Exception to plaintiff. Marked 5 for identification.

The Master: Objection sustained to Plaintiff's Exhibit 6.

Exception to plaintiff. Marked Exhibit 6 for identification.

Plaintiff's Exhibit 7 for identification is an agreement dated October 16, 1895 between The Brooklyn Gas Light Company and The Brooklyn Union Gas Company produced from the records of the company. I recognize the signature of Mr. A. E. Orr, President, and can testify it is his signature. This is the original agreement between the companies.

Mr. J. A. Dykman: I offer it in evidence, Exhibit 7 for identification.

I am familiar with the signature of Mr. Young, the president of The Brooklyn Union Gas Company and it is his signature.

Mr. Deegan objected to document as incompetent, irrelevant and immaterial, no foundation laid for it, merely hearsay, no proof of value.

Mr. Cummings: I join in the last part of that objection, it is no proof of value of the property, that is now used and useful, owned by The Brooklyn Union Gas Company.

The Plaintiff offered in evidence deed dated November 4th, 1895, between the Brooklyn Gas Light Company and The Brooklyn Union Gas Company, recorded in the Register's Office, Kings County, Liber 2, page 529 of Conveyances in Section 1, Blocks 6, 13, 33, 55 and 255, November 6th, 1895.

Overruled; exception to defendant; Plaintiff's Exhibit No. 15. The objections to Exhibit 7 for identification was overruled.

Exception to Defendants. (Marked Plaintiff's Exhibit No. 7.)

[fol. 381] Plaintiff offered in evidence deed between the Citizens Gas Company of Brooklyn, and The Brooklyn Union Gas Company, dated November 4th, 1895, and recorded in the office of the Register of Kings County in Liber 3, page 333 of Conveyances, in Section 2, Block 285, 469, 471 and 473, November 6, 1895. Same objection by defendants. Objection overruled, exception to defendants. (Marked Plaintiff's Exhibit No. 16.)

I am familiar with signatures on Plaintiff's Exhibit No. 8 for identification, agreement between the Citizens Gas Company of Brooklyn and The Brooklyn Union Gas Company, dated October 16th, 1895, signed by Mr. Hillhouse, as president, on behalf of the Citizens Gas Company, and Mr. Young as president, on behalf of The Brooklyn Union Gas Company, and same was produced from the files of the company and is the original agreement.

Plaintiff offered Exhibit No. 8 for identification in evidence. Defendants made same objections to it. Admitted exception to defendants. (Marked Plaintiff's Exhibit 8 in evidence.) The Master rules one exception covers all of the defendants.

Plaintiff offered in evidence deed dated November 4th, 1895, between The Fulton Municipal Gas Company of the City of Brooklyn and The Brooklyn Union Gas Company, recorded in the Register's Office, Kings County, in Liber 2, page 328 of Conveyances in Section 10, lot 3048, November 6th, 1895, and in the same office in Liber 3, page 328 of Conveyances, Section 2, Blocks 419, 420, 425 and 426 on the [fol. 382] same day November 6, 1895. Defendants make

same objection with exception to defendants. (Marked Plaintiff's Exhibit No. 17.)

Plaintiff's Exhibit No. 9 for identification, agreement dated October 17, 1895, between The Fulton Municipal Gas Company and The Brooklyn Union Gas Company, is the original agreement produced from the files of the company, and I am familiar with the signatures of both James Jourdan and George W. Young.

Plaintiff offers Exhibit No. 9 for identification. Defendants make same objection. The Master overruled; exception to defendants. (Marked Plaintiff's Exhibit No. 9 in evidence.)

Plaintiff offers in evidence deed between Alvin R. Johnson and Annie S. Johnson, his wife, to The Brooklyn Union Gas Company, recorded in the Register's Office, Kings County in Liber 3, page 143 of Conveyances, in Section 12, block 3751, November 6th, 1895. Objected to by defendants, Public Service Commission; admitted; exception to defendants. (Marked "Plaintiff's Exhibit No. 18".)

Plaintiff offers in evidence deed dated November 4th, 1895, between Metropolitan Gas Light Company of Brooklyn and The Brooklyn Union Gas Company, recorded in the Register's Office, Kings County, in Liber 5, page 242 Conveyances, in Section 4, Block 1019, November 6, 1895. Same objections by defendants Public Service Commission; admitted; exception to defendants. (Marked "Plaintiff's Exhibit No. 19.")

Plaintiff's Exhibit 10 is the original agreement between the Metropolitan Gas Light Company and The Brooklyn Union Gas Company dated October 16, 1895, from files of [fol. 383] the company and the signatures are those of Mr. Orr and Mr. Young.

Plaintiff offers it in evidence; same objection by defendants Public Service Commission; objection overruled; exception to defendants. (Marked "Plaintiffs' Exhibit No. 10" in evidence.)

Plaintiff offers in evidence deed dated November 4, 1895, between The Nassau Gas Light Company and The Brooklyn Union Gas Company, recorded in the Register's Office,

Kings County, in Liber 3, page 534 of Mortgages, in Section 7, Blocks 1886 and 1980, November 6, 1895, and Liber 3, page 307 of Mortgages, Section 8, Blocks 2161 to 2197 and 2223, November 6, 1895. Defendants objected that it is not an absolute conveyance, it is simply a conveyance for the purpose of security, incompetent, irrevelant and immaterial. Objection overruled. Exception to defendants. (Marked Plaintiff's Exhibit No. 20.)

I am familiar with the signatures of both Mr. Legget and Mr. Young to Plaintiff's Exhibit No. 11 for identification, an agreement between The Nassau Gas Light Company and The Brooklyn Union Gas Company and I produced it from the files of the Company. It is the original agreement.

Offered in evidence by plaintiff. Defendants object. Overruled. Exception to defendants. (Marked Plaintiff's Exhibit No. 11.)

Exhibit 12 for identification is a copy of an agreement between The Nassau Gas Light Company and The Brooklyn Union Gas Company dated the 4th day of November, 1895. I have been unable to locate the original. This is copied in the minute book of The Brooklyn Union Gas [fol. 384] Company and authorized in that book—its execution authorized in the minutes. I have tried to find the original. I searched among the old documents of the Company, the documents that we have, but that was the only paper that I could find, that copy. I think I have seen the original. It was in 1896. My recollection is that I copied this, that I made this copy myself, that this is a copy that I made from the original documents.

Plaintiff offers it in evidence. Defendants object to it on the ground objected in relation to all the agreements; that it is not the original. Objection overruled. Exception to defendants. (Marked Plaintiff's Exhibit No. 12.)

Plaintiff offers in evidence deed of Williamsburg Gas Light Company to The Brooklyn Union Gas Company, dated November 4th, 1895, marked on the outside, "Please record and return to Simpson, Thacher & Barnum," recorded in the Register's Office, Kings County, in Liber 3, page 301 of Mortgages, in Section 8, Blocks 2283, 2287, 2288 and 2405, November 6th, 1895. Defendants objected

to it on same ground made to the other instruments. Objection overruled. Exception to defendants. (Marked Plaintiff's Exhibit No. 21.)

Plaintiff's Exhibit No. 14 for identification, dated October 16th, 1895, between The Williamsburg Gas Light Company and The Brooklyn Union Gas Company is the original agreement produced from the files, and I am familiar with the signature of Mr. Henry Steers. It is the original agreement from the files of the Company and I am familiar with Mr. Steers signature.

[fol. 385] Plaintiff offers it in evidence. Objection by defendants—same grounds. Overruled. Exception to defendants. (Marked Plaintiff's Exhibit 14.)

Plaintiff offers in evidence deed dated November 4th, 1895, between the Peoples Gas Light Company and The Brooklyn Union Gas Company, recorded in the Register's Office, King's County, Liber 3, page 529 of Mortgages in Section 8, Block 2154, November 6th, 1895. Same objection by defendants. Overruled. Exceptions to defendants. (Marked Plaintiff's Exhibit 22.)

Plaintiff's Exhibit 13 for Identification, agreement dated October 15th, between the Peoples Gas Light Company and The Brooklyn Union Gas Company is produced from the files of the company, and is the original agreement.

Those are the signatures of Mr. Edwin Ludlam and Mr. Young.

Plaintiff offers same in evidence. Same objection by defendants. Overruled. Exception by defendants. (Marked Plaintiff's Exhibit 13.)

Plaintiff offers in evidence Chapter 204 of the Laws of 1825, entitled "An Act to incorporate a gas light company in the Village of Brooklyn," passed April 18th, 1825, which is the Act incorporating the Brooklyn Gas Light Company. Defendant objects on the ground it is incompetent and immaterial. Overruled. Objection overruled. Exception to defendants. (Received as Plaintiff's Exhibit 23.)

Plaintiff offers in evidence Chapter 57 of the Laws of 1850 entitled, "An Act to amend an Act entitled, An Act to incorporate a gas light company in the Village of Brook-

[fol. 386] lyn, passed April 18th, 1825, and to confirm the

election of directors," this Chapter being passed March 12th, 1850. Same objection by defendant. Overruled. Exception to defendants. (Received as Plaintiff's Exhibit 24.)

Plaintiff offers in evidence certified copy of the certificate of incorporation of the Equity Gas Light Company of the Eastern District of the City of Brooklyn, filed January 31st, 1874, in the office of the Secretary of State. Defendant objects as immaterial. Overruled. Exception to defendants. (Marked Plaintiff's Exhibit 25.)

Certified copy of the certificate of incorporation of Equity Gas Company, filed and recorded in the Office of the Secretary of State May 29th, 1896. (Marked Plaintiff's Exhibit 26.)

Plaintiff offers in evidence certified copy of the articles of incorporation of the Nassau Gas Light Company, filed in the Office of the Secretary of State February 20, 1871. mitted. Exception by defendants. (Marked Plaintiff's Exhibit 27.)

Certified copy of the articles of association of the Peoples Gas Light Company, filed in the office of the Secretary of State November 17th, 1864. Marked Plaintiff's Exhibit 28.

Certified copy of the amended certificate of incorporation of the Peoples Gas Light Company filed in the office of the Secretary of State February 23, 1871. Marked Plaintiff's Exhibit 29.

[fol. 387] Certified copy of the certificate of incorporation of the Metropolitan Gas Light Company of Brooklyn, filed in the Office of the Secretary of State February 20, 1971. Marked Plaintiff's Exhibit 30.

Certified copy of the amended certificate of incorporation of the Metropolitan Gas Light Company of Brooklyn, filed in the Office of the Secretary of State February 20, 1871. Marked Plaintiff's Exhibit 31.

Certified copy of the articles of incorporation of the Fulton Municipal Gas Company, filed in the Office of the Secretary of State March 5, 1879. Marked Plaintiff's Exhibit 32.

Certified copy of the articles of incorporation of the Williamsburgh Gas Light Company filed in the Office of

the Secretary of State July 5, 1850. Marked Plaintiff's Exhibit 33.

Certified copy of the articles of incorporation of the Citizens Gas Light Company, filed in the office of the Secretary of State Oct. 26, 1853. Marked Plaintiff's Exhibit 34.

Certified copy of the articles of incorporation of the Union Gas Light Company, filed in the Office of the Secretary of State June 26, 1861. Marked Plaintiff's Exhibit 35.

Certified copy of the certificate of incorporation of the Mutual Gas Light Company of the City of Brooklyn filed in the Office of the Secretary of State December 9, 1875. Marked Plaintiff's Exhibit 36.

[fol. 388] Certified copy of the certificate of incorporation of the Greenpoint Gas Light Company filed in the Office of the Secretary of State November 29, 1853. Marked Plaintiff's Exhibit 37.

Certified copy of an agreement between the Citizens Gas Light Company and the Union Gas Light Company filed in the Office of the Secretary of State—original filed April 1, 1892. Marked Plaintiff's Exhibit 38.

Extract from minutes of the Common Council of the City of Brooklyn, meeting held June 7, 1897, certified by the City Clerk, ordering The Brooklyn Union Gas Company to lay mains in certain sections of the City. Objected to it as incompetent, irrelevant and immaterial. Marked Plaintiff's Exhibit 39.

Extract from the minutes of the Common Council of the City of Brooklyn, meeting held October 18, 1897, certified by the City Clerk, directing The Brooklyn Union Gas Company to lay mains in certain streets. Marked Plaintiff's Exhibit 40.

Extract from the minutes of the Common Council of the City of Brooklyn, meeting held October 25, 1897, certified by the City Clerk. Marked Plaintiff's Exhibit 41.

Extract from the minutes of the Common Council of the City of Brooklyn, meeting held December 20, 1897, certified by the City Clerk. Marked Plaintiff's Exhibit 42.

Extract from the minutes of the Common Council of the City of Brooklyn, meeting held March 29, 1847, certified by the City Clerk, in which it is resolved that the Brooklyn Gas Light Company be authorized to lay all necessary pipes

[fol. 389] and fixtures in any of the streets of the City of Brooklyn. Marked Plaintiff's Exhibit 43.

Extract from the minutes of the Common Council of the City of Brooklyn, meeting of April 5, 1847, certified by the City Clerk, with reference to the Brooklyn Gas Light Company. Marked Plaintiff's Exhibit 44.

Document in the Office of the City Clerk labeled, "Document 24, Compiled by the City Clerk entitled, "City Railroads and Gas Companies, resolutions, etc., of the Common Council of the City of Brooklyn and Laws of the State of New York granting Franchises to Railroad and Gas Companies of said City, and also agreements with and bonds of said companies," a contract between the Mayor and Common Council of the City of Brooklyn and Brooklyn Gas Light Company, dated April 29, 1848. Marked Plaintiff's Exhibit 45.

From the same book a contract dated April 26, 1849, between the Mayor and the Common Council of the City of Brooklyn and the Brooklyn Gas Light Company. Marked Plaintiff's Exhibit 46.

From the same book copy of a contract between the Mayor and the Common Council of the City of Brooklyn dated October 18, 1849, and certified by the City Clerk. Marked Plaintiff's Exhibit 47.

Bond of Brooklyn Gas Light Company to the Mayor and Common Council of the City of Brooklyn certified by the City Clerk. Marked Plaintiff's Exhibit 48.

Resolution of the Common Council of the City of Brooklyn [fol. 390] granting permission to the Citizens Gas Light Company to lay mains, dated March 28, 1859, and certified by the City Clerk. Marked Plaintiff's Exhibit 49.

Volume produced by the City Clerk entitled, "Proceedings of the Board of Aldermen, Volume 11, 1869," on the title page of which it stated that it was "Printed for the Corporation," resolution adopted at the meeting of the Common Council held November 8, 1869. Marked Plaintiff's Exhibit 50.

Chapter 177 of the Laws of 1862, entitled, "An Act to confirm certain acts of the officers and constituted authorities of the Town of New Lots, County of Kings, State of New York, passed April, 12, 1862." Marked Plaintiff's Exhibit 51.

Plaintiff's Exhibit 52 is taken from the files of the company and is an agreement between Ditmas Jewell and Nicholas Duryea, Edward Richards and Thomas F. Ryan, as Commissioners of Highways of the Town of New Lots, and the Union Gas Light Company of the County of Kings. This is an original paper in our office and was turned over to us among the papers received from the Citizens Gas Company at the time we acquired that company in 1895. I was present when these papers were turned over, Mr. M. A. Brown, secretary of the Citizens—he was secretary of the former Union Gas Light Company or had been, brought them. Marked Plaintiff's Exhibit No. 53 in evidence.

Plaintiff's Exhibit 53 for identification is an agreement dated the 2nd day of June, 1895, between Henry Wolfert, Supervisor of the town of New Lots, and The Union Gas Light Company, and it was turned over at the same time as the other papers, by Mr. Brown.

[fol. 391] (Plaintiff's Exhibit No. 52 for identification received in evidence.)

Plaintiff's Exhibit No. 53 is an agreement dated June 2, 1895 between Henry Wolfert, Supervisor of the Town New Lots, and the Union Gas Light Company which was turned over to us at the same time as the other papers by Mr. Brown. Asked the same questions with reference to which I was asked with reference to the previous exhibit, I would give the same answer. (Marked plaintiff's Exhibit No. 53.)

(Plaintiff's Exhibit No. 54 for identification received in evidence.)

Copy, certified by the City Clerk, of resolutions of the Common Council of the City of Brooklyn, dated January 17, 1876, granting permission to the Mutual Gas Light Company to lay mains received and marked Plaintiff's Exhibit No. 55, in evidence.

Copy of a resolution of the Common Council of the City of Brooklyn, dated March 13th, 1871, certified by the City Clerk, granting permission to the Metropolitan Gas Light Company to lay mains and so forth. (Marked Plaintiff's Exhibit No. 56.)

Copy of the resolution of the Common Council of the City of Brooklyn, adopted April 7th, 1870, certified by the City Clerk, granting permission to the People's Gas Light Company to lay mains. (Marked Plaintiff's Exhibit No. 57.)

From the same document, produced from the office of the City Clerk, a contract between the City of Brooklyn, and the Williamsburg Gas Light Company, dated January 1, 1855. (Marked Plaintiff's Exhibit No. 58.)

Chapter 144 of the Laws of 1874, entitled: "An Act to regulate the sale of illuminating gas manufactured by the Equity Gas Light Company of the Eastern District of the City of Brooklyn, and to authorize the laying of mains and conductors in certain wards of said City," passed April 9th, 1874. (Marked Plaintiff's Exhibit No. 59.)

[fol. 392] Plaintiff's Exhibit No. 60 for identification is a correct copy of the first Consolidated Mortgage of the Brooklyn Union Gas Company filed in the office of the Register of the County of Kings on November 5th, 1895, in Liber 3 of Mortgages, page 165. In our possession, we have a copy, but the original is with the Guaranty Trust Company of New York, the successor Trustee to the New York Guaranty & Indemnity Company.

Marked Plaintiff's Exhibit No. 60, in evidence.

No. 61 for identification is a correct copy of the First Lien and Refunding Mortgage, dated May 1st, 1922, of the Brooklyn Union to the National City Bank of New York as Trustee. The original of that is with the National City Bank, the trustee of the mortgage.

Plaintiff's Exhibit No. 61 for identification was received in evidence.

Tabulation showing the distribution of the stocks and bonds of the Brooklyn Union Gas Company in accordance with or under the agreements with the vendor companies which have been put in evidence.

Marked Plaintiff's Exhibit No. 62 in evidence.

That was prepared from the contracts themselves. The different agreements between the plaintiff company and these seven predecessor companies. The amounts shown

on here, on this statement is correct. A compilation from them. The tabulation shows that the bonds reserved for retirement amounted to $3,900,000 as of November, 1895, since which time all of the bonds have been retired with the exception of $264,000 of the Citizens Gas Company, which are still outstanding. No bonds of the plaintiff shown on the tabulation have been retired.

[fol. 393] I was familiar with the property described in the deeds from the vendor companies which have gone in evidence. I visited each of those properties. I have been through them all and saw them in operation, at that time—prior to and after 1895. And prior to this purchase they were going concerns.

Plaintiff continued the operation of the various plants and the properties. Prior to November, 1895, I was secretary to the President of The Fulton Municipal Gas Company, General Jourdan. And The Brooklyn Union Gas Company, since 1895, has manufactured and sold gas in the City and later in the Borough of Brooklyn.

The $500,000 of the total issue of $15,000,000 of bonds shown on Exhibit 62, were reserved for betterments and extentions. The $500,000 was reserved for the issue—reserved for betterments and extensions. They were subsequently issued.

Certified copy of the order of the Public Service Commission for the First District, "In the Matter of the Application of the Brooklyn Union Gas Company for the Consent, and Approval of the Commission to the Issue of $3,000,000 par value of its Capital Stock for the purpose of converting convertible Debentures of said Company heretofore issued," being the final order in Case No. 640 offered by plaintiff.

Objected upon the ground it is incompetent, *irrevelant* and immaterial, and bidding upon the Attorney General, the State in this case. Objection overruled. (Marked Plaintiff's Exhibit 63.) No objection to Exhibit 63 on the ground that it was not actually certified.

Exhibit 63 was received by the company. The securities described in it have been issued and are outstanding.

[fol. 394] Plaintiff offers in evidence certified copy of an order of the Public Service Commission for the First

District, dated September 9th, 1919, in the Matter of the Application of The Brooklyn Union Gas Company under Section 69 of the Public Service Commission's law for an order, authorizing the issuance of $2,800,000 debenture bonds, Case No. 2365.

Defendants make same objection; overruled. (Marked Plaintiff's Exhibit 64.)

Exhibit 64 was received by the company and the securities mentioned in it have been issued and are outstanding.

Plaintiff offers in evidence a certified copy of an order of the Public Service Commission for the First District dated February 13th, 1920, in the Matter of the Application of the Brooklyn Union Gas Company for authority to issue $2,000,000 of stock, Case No. 2443. Defendants make same objections. Overruled. (Marked Plaintiff's Exhibit 65.)

This order was received from the Commission, the company has not yet issued the securities called for under this order. This calls for an issue of $2,000,000 of stock which would be used for the conversion of the $2,000,000 debentures authorized by the Commission. The time for conversion has not arrived as yet. The securities will be issued at the option of the holder of the debentures who can present them for conversion into stock.

Plaintiff offers in evidence a certified copy of an order of the Public Service Commission for the First District, dated September 21, 1920, in the Matter of the Application of The Brooklyn Union Gas Company under Section 69 of the Public Service Commission's Law, for an order authorizing the issuance of $38,000 of mortgage bonds, under its first consolidated mortgage bonds were issued and [fol. 395] are now outstanding. These bonds were issued for the purpose of retiring a like amount of first consolidated mortgage bon-s of the Union Gas Light Company which had become due.

Plaintiff offers in evidence a certified copy of an order of the Public Service Commission, dated May 10, 1922, in the matter of the application of The Brooklyn Union Gas Company, pursuant to Section 69 of the Public Service Commission's Law, for an order authorizing the issuance of $6,000,000 aggregate principal amount of first lien, and re-

funding mortgage bonds, and $5,579,000, aggregate principal amount of convertible debenture bonds, and the issuance of a similar amount of capital stock to meet the conversion of the convertible debenture bonds for the purpose therein specified, and pursuant to Section 70 of the Public Service Commission's Law, for the permission and approval of the Commission to acquire the first mortgage gold bonds of the Newtown Gas Company, the Flatbush Gas Company, the Jamaica Gas Light Company, and Woodhaven Gas Light Company, Case No. 309.

Defendants make same objection. Overruled (marked Plaintiff's Exhibit 67) as immaterial and irrelevant, so far as the order deals with the question of authorizing this plaintiff company to purchase and acquire bonds of the subsidiary companies named.

Plaintiff offers in evidence certified copy of the order of the Public Service Commission, dated May 18, 1922, in the same case as the preceding exhibit, being an amendatory order of the previous order.

Same objection by defendants; overruled. (Marked Plaintiff's Exhibit 69.)

Exhibits 68 and 69 were received from the Commission [fol. 396] by the Company.

Under the orders in case No. 309, there have been issued six million first lien and refunding mortgage bonds, and $5,579,000 convertible seven per cent debenture bonds.

Plaintiff offers in evidence certificate of the Secretary of State, dated January 7, 1904, to the effect that a certificate of increase of capital stock of the Brooklyn Union Gas Company from $15,000,000 to $20,000,000 was filed and recorded in his office on January 7, 1904.

Same objection by defendants; admitted. (Marked Plaintiff's Exhibit 70.)

Certified copy of the certificate of increase of capital stock of The Brooklyn Union Gas Company filed in the Office of the Secretary of State on May 31, 1922, increasing the capital stock from twenty to thirty million dollars, to provide for the conversion of the debenture bonds that have been shown in the other exhibit admitted. (Marked Plaintiff's Exhibit 71.)

(Plaintiff's Exhibits 72, 73, and 74 marked for identification.)

Plaintiff's Exhibit 72 for identification is a correct copy of a schedule of rates filed by the plaintiff with the Public Service Commission May 14, 1921. Plaintiff's Exhibit 73 for identification is a correct copy of a schedule of rates filed with the Public Service Commission by the plaintiff on August 1, 1921.

Plaintiff's Exhibit 74 for identification is a correct copy of a schedule of rates filed by the plaintiff with the Public Service Commission on October 8, 1922 and a schedule of which that is a copy was filed as of September 30th, 1922, effective as of October 1st, 1922.

Plaintiff's Exhibits 72, 73 and 74 for identification received in evidence.

[fol. 397] Defendants object to the receipt in evidence of Plaintiff's Exhibits 72, 73 and 74 for identification as irrelevant and immaterial. Plaintiff's Exhibit No. 74 received and the defendants except. (Plaintiff's Exhibit No. 74 for identification was received in evidence.)

Plaintiff offers in evidence certified copy of an order of the Public Service Commission, dated August 30, 1922, in the case entitled, "Matter of Gas Rates in the City of New York and Suzburban Territory," the Order applying to The Brooklyn Union Gas Company, The Newtown Company, The Flatbush Gas Company, The Woodhaven Gas Light Company, the Jamaica Gas Light Company, and the Richmond Hill and Queens County Gas Light Company, which order embodies the rate contained in Plaintiff's Exhibit No. 74.

Defendants make the same objections. Objection overruled. (Marked Plaintiff's Exhibit No. 68.)

FREDERICK R. WOGAN

Direct:

Certified copy of a contract between the Greenpoint Gas Light Company and the City of Brooklyn, dated April 21st, 1856, certified by the City Clerk. (Marked Plaintiff's Ex-

hibit No. 75.) Extract from the minutes of the Common Council of the City of Brooklyn at a meeting held August 19th, 1872, certified by the City Clerk and containing a report and resolution concerning the Williamsburg Gas Light Company and other companies. (Marked Plaintiff's Exhibit No. 76.) Book entitled "Proceedings of the Common Council of the City of Brooklyn from January 1st to March 31, 1897, Volume 1, Brooklyn; printed for the Corporation 1897," page 880, the following resolution of the Common Council from the minutes of the Common Council. "Report of the Committee on Electricity and Gas: The Committe on Electricity & Gas, to whom was referred Resolution No. 6, of the minutes of February 8, 1897, relative to the communication from the Commissioner of City Works, accompanying the proposal for lighting streets and public buildings for one, three, five and ten years, reports: that they have carefully examined into the matter so referred, and recommend for adoption the following:

"(Resolution No. 24:) Resolved that the Commissioner of City Works be and he hereby is directed to award and execute contracts with the Brooklyn Union Gas Company [fol. 399] for lighting the Streets and public buildings with gas for the term of five years from January 1, 1897, in accordance with proposals submitted to this Board by said Commissioner on February 8th, 1897. The expense for the same to be charged to the accounts of Lighting Streets, gas for Public Buildings, Fire Department, Police Department, etc., etc., provided, however, that the contract shall provide for the reduction in prices to private consumers, as stated in the bids." The resolution was adopted. Offered in evidence by plaintiff, objected to by defendant—overruled. Plaintiff's Exhibit No. 77 for Identification was produced from the files of the company and it is a copy of the contract with the City of New York, dated the 15th day of March, 1897, for the supply of gas to the public and private consumers of the City of Brooklyn from January 1, 1897, to December 31, 1901, inclusive. The original is in the office of the Comptroller of the City of New York. Exhibit No. 77 for identification, is a correct copy of the original on file in the Comptroller's office. Offered in evidence by plaintiff. Objected to by defendants on the ground that it

is irrelevant and immaterial, and covering a period which has long since expired. Objection overruled. (Marked Exhibit No. 77.) I have prepared a tabulation of the stocks [fol. 400] and bonds of the plaintiff company outstanding October 31, 1923. This paper is a tabulation so prepared. Offered by plaintiff. Defendants objected upon the ground it is incompetent, irrelevant and immaterial, in so far as the valuation of the property is concerned. Objection overruled. (Received in evidence as Plaintiff's Exhibit No. 78.) All of the companies were operating and they all had manufacturing plants in operation, with the exception of the plant of the Peoples—the manufacturing plant of the Peoples Company. All the other plants, manufacturing plants, and all the plants of the companies were operating. The Peoples works was not operating in 1895 and those works were never operated by the Brooklyn Union. The Peoples Company was purchasing its gas from the Fulton Municipal Company. The Peoples Company had a holder station on Skillman Street and distributed their gas from that holder station. The property was used by the Brooklyn Union Company at the time it was acquired in 1895. Plaintiff's Exhibit No. 79 for identification is a correct copy of the acceptance by the Plaintiff of the order of the Public Service Commission in Case No. 79, entitled: "Matter of Gas Rates in the City of New York and suburban territory," already in evidence. The original was sent to the Commission. (Marked Plaintiff's Exhibit No. 79.) Plaintiff offered in [fol. 401] evidence a certified copy of an order of the Public Service Commission dated August 30, 1922, in the proceeding entitled: "In the Matter of Standards of Purity Lighting Power and Heating Power of Gas, and Standards of Measurement thereof in the City of New York and Suburban Territory, Case No. 108, Order fixing standards of purity, power and pressure." Objected to by defendants upon the ground it is incompetent, irrelevant and immaterial. Exhibit admitted. Exception by defendants. (Marked Plaintiff's Exhibit No. 80.) Plaintiff's Exhibit No. 81 for identification is a correct copy of the notification of acceptance of the order in case No. 108, Plaintiff's Exhibit No. 80. Plaintiff offered it in evidence. Defendants object upon the ground it is insufficient for the purpose of proving an acceptance and compliance with the order of the Public Serv-

ice Commission. Objection overruled. Exception to defendant. (Plaintiff's Exhibit No. 81 for identification received in evidence.) Plaintiff offered in evidence a certified copy of the proceedings by the Attorney General entitled "In the Matter of the Petition of John C. Lester to the Attorney General of the State of New York, to institute proceedings against the Brooklyn Union Gas Company, Williamsburg Gas Light Company, Fulton Municipal Gas Company, Nassau Gas Light Company, Peoples Gas Light Company, Metropolitan Gas Light Company, Citizens Gas Company, and the Brooklyn Gas Light Company, to annul their charters and to restrain each and every one of said [fol. 402] corporations from continued violation of the law against trusts, monopolies and combinations and conspiracies for the purpose of unlawfully restraining trade." Plaintiff takes an exception. (Marked Exhibit 82 for identification.)

The Master:

After listening to the argument of counsel, I am confirmed in my ruling, yet in view of the equity rules, I will allow the exhibits to be marked in evidence. Defendants exception. (Marked Plaintiff's Exhibit 82.) Plaintiff offered in evidence certified copies of the judgments in the Supreme Court, Albany County, in the cases of The People of the State of New York against Peoples Gas Light Company, dated December 10, 1896; the People of the State of New York against Nassau Gas Light Company, dated the same day; The People of the State of New York against Williamsburg Gas Light Company, same date; the People of the State of New York against Citizens Gas Company, same date; The People of the State of New York against Fulton Municipal Gas Company, same date; The People of the State of New York against Metropolitan Gas Light Company, same date. Defendants object as immaterial. Received. Defendants except. (Marked Plaintiff's Exhibits 83, 83-A, 83-B, 83-C, 83 D, 83-E, and 83-F. I am familiar with the signature of Mr. Pettit. Plaintiff's Exhibit 84 for Identification, being a book entitled "Minutes, 1893 to 1895, Brooklyn Gas Light Company" and look at page 118, entitled "Minutes of the Board of Directors, October [fol. 403] 2, 1895." I first saw this book in the latter part

of 1895 or the beginning of 1896, the very early part of 1896, when it was turned over by the Secretary, Mr. Pettit, the Secretary of the Brooklyn Gas Light Company to Mr. Ludlam, Secretary of the Brooklyn Union Gas Company and it has remained in the possession of the Brooklyn Union Gas Company since that time and I produce it from the files of the company. Mr. William L. Pettit, who signed as Secretary, is dead. Plaintiff offered from the book marked Exhibit No. 84 for identification, the minutes of the meeting of the Board of Directors of the Brooklyn Gas Light Company held November 13, 1895, commencing on page 138, and including eleven lines of page 139, and the signature of the secretary, Mr. William L. Pettit, at the bottom of page 139. Defendants object to it as incompetent, irrelevant and immaterial and not properly proved. Objection overruled. Exception to defendants. (Marked Plaintiff's Exhibit No. 84.) Exhibit 85 is the minute book of the Board of Directors of the Citizens Gas Company, and it was turned over—I saw this book first in, I think, the early part of 1896, and it was turned over to the Secretary of the Brooklyn Union Conapany, Mr. Ludlam, by the secretary of the Citizens Gas Company, when the secretary turned over some books and papers, and he delivered this book particularly, I remember it being delivered into the [fol. 404] office of the secretary of the company. Since then it has been in the vault of the Brooklyn Union Company. That is Mr. Evans' signature on page 102 of the meeting held November 29, 1895, and I think he is dead. I think he died about two or three years ago. I won't be sure, but I understand that he is dead. To the best of my information he is dead. Plaintiff offers from this book, Plaintiff's Exhibit No. 85 for identification, from page 101, the minutes of the meeting of the Board of Directors of the Citizens Gas Company, held November 29, 1895, contained on pages 101 and 102.

By defendants counsel:

I don't know anything about the accuracy of these minutes, and I don't know whether Mr. Evans is alive or dead, except what I have been told.

Defendants objected to it on the ground it is incompetent, irrelevant and imaterial and not the proper mode of

proof, and also upon the further ground that the minutes are in no way proof of the contents of the matter therein referred to. Objection overruled. Exception to defendants. (Plaintiff's Exhibit No. 85 for identification.)

By plaintiff's counsel:

I produce Plaintiff's Exhibit 86 for identification. Book entitled Minutes, 1895-1896, Williamsburg Gas Light Company, from the files of the Plaintiff. I first saw this in the early part of 1896, when it was turned over to the secretary of the Brooklyn Union Company, Mr. Ludlam by Mr. Blodgett, the secretary of the Williamsburg Gas Light Company. I was present and saw it delivered and it has since [fol. 405] been in the possession of the plaintiff. I am familiar with the signature of Mr. C. W. Blodgett, secretary, on page 47. I knew Mr. Blodgett. He is dead.

Plaintiff offered from Plaintiff's Exhibit No. 86 for identification, the minutes of the meeting held November 8th, 1895, on page 25, all of the minutes of that meeting, contained on pages 25, 26 and 27.

I don't know anything more about the accuracy of these minutes than I did of the last minutes offered.

Same objection by defendants. Exception to defendants. (Pages 25, 26 and 27 marked Plaintiff's Exhibit No. 86.)

I produce Plaintiff's Exhibit No. 87 for identification, book entitled Minutes, 1879, 1896, Fulton Municipal Gas Light Company. This was turned over by Mr. Rossiter, the secretary of the Fulton Municipal Company to Mr. Ludlam, secretary of the Brooklyn Union Company in the early part of 1896. I was present at the delivery. At pages 435 and 436 and state that is the signature of Mr. Rossiter at the bottom of page 436. I am familiar with his writing. He is dead.

Plaintiff offers from plaintiff's exhibit No. 87 for identification, pages 435 and 436, being minutes of a meeting of the Board of Directors of the Fulton Municipal Gas Company of November 18, 1895.

They are in my handwriting; I know that they are accurate to that extent. I wrote what Mr. Rossiter dictated [fol. 406] to me. I was not present at the meeting.

Defendants made same objection. Objection overruled. Exception to defendants. (Pages 435 and 436 marked Plaintiff's Exhibit No. 87.)

I produce Plaintiff's Exhibit No. 88 for identification, book entitled "Minutes 1884-1896, Peoples Gas Light Company," from the files of the Plaintiff Company. It was turned over to Mr. Ludlam, the secretary of the Brooklyn Union Company, by Mr. Mitchell, the secretary of the Peoples Company, in the early part of 1896. This book has remained in the possession of the plaintiff since that time. At pages 192 and 193, minutes of the meeting of the Board of Directors held November 19, 1895, I recognize the signature of Edward D. Mitchell, the secretary, on page 193. I am familiar with it. I believe he is dead. So I have heard. He would be very old if he were alive now. In 1895 I think he was in his sixties.

Plaintiff offers from Plaintiff's Exhibit No. 88 for identification pages 192 and 193, being the minutes of the meeting of the Board of Directors of the Peoples Gas Light Company held November 19, 1895.

I do not know anything personally about the accuracy of these minutes.

Same objection by defendants. Overruled. Exception to defendants. (Pages 192 and 193 marked Plaintiff's [fol. 407] Exhibit No. 88.)

Plaintiff's Exhibit No. 89 for identification, a book entitled "Minutes, 1894-1896, Nassau Gas Light Company," was produced from the files of the Company. This was turned over in the early part of 1896, I think it was, to Mr. Ludlam, secretary of the Brooklyn Union Company, by Mr. White, the secretary of the Nassau Company. I think there were two other books at the same time, two other minute books, and it has remained in the possession of the company since. I was present when it was delivered. That is the signature of Mr. S. T. White, I have mentioned on page 67. I am familiar with his signature. He is dead.

Plaintiff offers from Plaintiff's Exhibit No. 89 for identification, pages 65, 66 and the top of page 67, the minutes of a meeting of the Board of Directors of the Nassau Gas Light Company held November 20, 1895.

I know nothing about the accuracy of those minutes.

Same objection by defendants. The objection overruled. Exception to defendants. (Pages 65, 66 and 67 marked Plaintiff's Exhibit No. 89.)

[fol. 408] ARTHUR F. STANIFORD

Direct:

In 1895 I was secretary of the Metropolitan Gas Light Company. Plaintiff's Exhibit 90 for identification is the minutes of a meeting of the Board of Directors of my company held November 11, 1895, and that is my signature at the bottom of page 176. I was present at that meeting. These minutes on page 175 and 176 correctly state the proceedings of the meeting.

Plaintiff's counsel offers from Plaintiff's Exhibit No. 90 for identification pages 175 and 176. Objected to by defendants on the same ground as to the previous exhibit.

I entered in a clerical capacity; that is, at the Brooklyn Union end. For a while I was manager of the Metropolitan branch, in addition to being in a clerical capacity, doing clerical work at the Brooklyn Union office. I worked upon the books of the Brooklyn Union Company,—journals and ledgers. The opening journals of the Brooklyn Union Gas Company are in my handwriting. I do not know whether at the time this property was taken over by the Brooklyn Union Company there was in existence an inventory of the properties of the constituent companies or not.

The exhibit admitted and the objection overruled. Exception to defendants. (Marked Plaintiff's Exhibit No. 90 in evidence.)

[fol. 409] Cross:

The extracts from the opening entries in the journal of the Brooklyn Union Gas Company at the time of the transfer of the properties of the vendor companies to the Brooklyn Union Gas Company shown on this paper called Exhibit No. 268, designated as Report and Testimony of the Joint Committee of the Senate and Assembly, to Inquire into The

Gas and Electric Lighting Companies in the City of New York, 1905, Volume 11, at pages 1549 to 1568, in general appear to be correct. I am not prepared to day to testify that every figure is correct, because I know there are errors all through the printed testimony in that case. I could not point out any specific error, at the present moment. I do not think those opening entries were taken from the closing entries of the vendor's books. I want to say I do not think they could have been taken from the vendor companies' books, because there are entries here that could not have appeared in the constituent companies' books. I furnished that statement to Judge Hughes at the time of the investigation by the Stevens Committee, as being the opening entries in the journal of the Brooklyn Union Company. "That statement" refers to the exhibit referred to.

Defendants offer the exhibit in evidence.

Excuse me a moment. Provided those figures are in [fol. 410] accordance with the exhibit. Defendants offer this exhibit in evidence, as being the opening entries of the journal of the Brooklyn Union Company, showing the transaction, and throwing light upon the actual consideration paid by the Brooklyn Union Company to these various vendor companies.

The Master: The offer is too broad. The witness has been interrogated concerning a certain schedule or list of entries here, and that schedule is deemed to be embodied within your question. His testimony is with reference to that schedule. I decline to receive it in evidence. You may have it marked for identification; because that is what he has testified about. He said that is or is not whatever you have asked him, and that is all in the evidence and is part of his testimony. The contents of that exhibit are deemed to be embodied in the question and answer of counsel and the witness, and it is unnecessary to put the exhibit itself in evidence.

Exception by defendants. (Marked Defendants' Exhibit No. 1 for Identification.)

It is my understanding that the contents of these pages are part of the evidence and part of the testimony as fully as if counsel had read them in his question. The reference to these pages was simply a matter of convenience, to avoid the physical act of reading these pages. There was added to the street main accounts of the various vendor companies for special franchise in the street, and incorporated in the opening journal of the Brooklyn Union Company, [fol. 411] that did not appear in the books of the constituent companies, between four and five million dollars.

Plaintiff moves to strike out the answer to the question. Motion denied. Exception by plaintiffs.

I could not answer what was added to the opening entries in the journal of the Brooklyn Union Company that did not appear in the books of the vendor companies, as to franchises and rights—the aggregate amount shown in the vendors' books.

The same objection by plaintiff. Same ruling. Exception by plaintiff.

I do not know what amount in excess of the constituent companies' books was added. I do not know the amount of the item called Franchise and Right Accounts in Exhibit No. 258, Defendants' Exhibit No. 1 for Identification. I could not answer what the terms used in that item were.

Q. Does the opening account in the journal entries of the Brooklyn Union show that the franchises and rights were then valued in the aggregate at $3,000,000?

Plaintiff objected as improper cross-examination with reference to a book not in evidence. Sustained. Defendants excepted.

Q. Mr. Staniford, do you understand what that item appearing on Defendant's Exhibit No. 1 for identification, designated Franchise and Rights Accounts, represents?

Plaintiff objected as improper, incompetent, irrelevant and immaterial. Sustained. Defendants excepted.

Q. Mr. Staniford, did you testify before the Stevens Committee that the valuation which appears in Defendant's [fol. 412] Exhibit No. 1 for Identification, concerning Fran-

chises and Rights, represents the franchise giving the company the right to make and sell gas, the right to do business.

Plaintiff objected as incompetent, irrelevant and immaterial. Sustained. Defendants excepted.

Q. Was this question put to you before the Stevens Legislature Committee by Judge Hughes and did you make this answer——

Plaintiff objects to his reading in evidence these questions and answers. This is not the way to go about it, even if it is proper to contradict it.

The Master: The objection is sustained. I do not understand how it is competent at the present stage of this case and in the condition of this witness's testimony—do not see how it is either competent or relevant to find what he testified anywhere else, upon any occasion, or upon any subject, unless it be strictly upon the matters in this direct examination.

Mr. Cummings: I offer, then, on this particular point, to show by this witness that $3,000,000 was added to the journal entries of the Brooklyn Union Gas Company for franchises and rights, and deemed by the company to be for the franchise giving them the right to make and sell gas, the franchise to do business. I offer to prove by this witness that that item means that. That is my offer of proof.

The Master: The Master declines to entertain an offer of proof.

Mr. Cummings: Then I ask the Master under this equity rule which permitted my opponents to read in the petition [fol. 413] of various people and also the opinion of the Attorney General, that this evidence be taken so that I can present the question further. The equity rule certainly works both ways.

The Master: Then ask your question, Mr. Cummings.

Mr. J. A. Dykman: Before the questions are asked sir, I move that this offer of proof be stricken physically from the record as highly improper, in the way of reading into the record something which should not be there.

The Master: That motion is denied.

Mr. J. A. Dykman: Exception.

Q. Mr. Staniford, what were represented by the item Franchises and Rights aggregating $3,000,000, shown on the opening entries of the journal of the Brooklyn Union Gas Company?

Mr. J. A. Dykman: The same objection.

Mr. Cummings: This is being taken now for the purpose of presenting this further—I understand under the equity rule.

Mr. J. A. Dykman: I make the same objection, as incompetent, irrelevant and immaterial, improper cross-examination. The examination is with reference to a book not in evidence, and this also calls for the conclusion of the witness.

The Master: I shall overrule the objection and see what the answer is.

A. I do not know.

Q. When asked by Judge Hughes, did you know at that time?

Mr. J. A. Dykman: That I object to, sir, as improper, incompetent, irrelevant, immaterial.

The Master: Sustained.

[fol. 414] Mr. Cummings: Give me an exception.

Q. When asked in substance by Judge Hughes what the $3,000,000 for franchises and rights represented, you made the answer that such——

Mr. W. N. Dykman: This is not the proper way, even if he is going to be allowed to make him his own witness, to do it.

Mr. Deegan: Your Honor, this is a hostile witness.

The Master: It is unusual, of course, to permit an objection to a question before the question is finished, but it sometimes occurs that the very opening words of a question indicate whether or not it will be competent, even before the question is finished, and I sustain the objection.

Mr. Cummings: Well, I will withdraw that question anyway.

Q. When asked by Judge Hughes, what the $3,000,000 set forth in this Exhibit, Defendants' Exhibit No. 1 for identification represented——

Mr. J. A. Dykman: I object to that sir.

Mr. Cummings: Wait until I finish.

Mr. J. A. Dykman: No, I submit that this is the sort of question that should not be asked.

Q. (Continuing:) Did you make the answer——

The Master: The objection is sustained, and I wish to say to Counsel for the defendant that the Master is not disposed to permit Counsel to utilize this cross-examination for the purpose of reading into this record a record of some other proceedings, when it becomes perfectly apparent that the evidence is incompetent for any purpose and is not material [fol. 415] or relevant upon any question we have here. And I want to say another thing—that in so far as counsel for the defendant is making this witness his own, to that extent the Master must be bound by the rules of evidence.

Mr. Cummings: Surely.

Mr. Deegan: I know, your Honor, but he is a hostile witness. That must be taken into consideration.

The Master: I agree with you, if it be shown that he is hostile.

Mr. Deegan: It does not appear that he is friendly.

Q. Mr. Staniford, you testified that you did not know what the item designated as franchises and rights, of $3,000,000, represented.

A. I testified to that.

Q. Did you know what it represented at that time?

Mr. J. A. Dykman: It is incompetent, irrelevant and immaterial, whether he knew it in 1905.

The Master: Sustained.

Mr. Cummings: Exception.

Q. Mr. Staniford, do you know whether any amount was assigned or was given on the opening entries of the journal of the Brooklyn Union Gas Company for the right to do business?

Mr. J. A. Dykman: I object to that, sir.

The Master: Of course, the question is amplified by these transactions that have been put in evidence.

Mr. Cummings: Yes.

The Master: The objection is overruled. Does he know, that is the question?

[fol. 416] A. What is the title of the account that you are asking about?

Q. Franchises and rights.

The Master: The question is does the witness know.

A. Not under that title.

Q. Was there any amount given for franchises and rights in the opening entries of the Brooklyn Union Journal.

Mr. J. A. Dykman: I object to that, sir.

The Master: Objection sustained. The books are the best evidence.

Q. I show you Defendants' Exhibit No. 1 for Identification and call your attention particularly to the item of franchises and right account, and ask you if you knew at that time what that item represented?

Mr. J. A. Dykman: I object to the form of that question.

The Master: Sustained.

Mr. Cummings: Exception.

The Master: I may call your attention, Mr. Cummings, to the fact that the exhibit for identification to which you have referred is not a paper having reference to any particular time, but was simply a paper used for the purpose of amplifying your question, without repeating the contents of the paper. You asked the witness something with reference to the items upon that paper without any reference to the source of the paper. The paper itself was not an exhibit, it was simply a convenience to counsel to utilize it without physically repeating all the contents of the paper.

Mr. Cummings: Yes, and I did want to offer it as an exhibit and you refused to take it.

[fol. 417] The Master: That is right.

Mr. Cummings: The witness has testified however, that it is an extract from the opening entries of the journal of the Brooklyn Union Gas Company, and now I am calling his attention to that one item, franchises and rights.

Q. In making up the journal entries of the Brooklyn Union Company did you add about $3,000,000 as the value of your right to be a gas Company to make and sell gas?

Mr. J. A. Dykman: I object to the question.

The Master: Where does it appear that the witness made up those entries?

Q. You made the original journal entries, did you not?

A. I did not formulate them, no. I had nothing to do with the formulation of them.

Q. You wrote the original journal entries, did you not?

A. They are in my handwriting.

Q. In making up the journal entries of the Brooklyn Union Company did you add about $3,000,000 as the value of your right to be a gas company, to make and sell gas?

Mr. J. A. Dykman: I object to that, sir, it now appearing that the witness did not make them up.

The Master: Sustained.

Mr. Cummings: Exception.

Q. Haven't you testified that you did add in making up——

Mr. J. A. Dykman: I object to this.

Mr. Cummings: Wait a moment until I finish.

[fol. 418] Mr. J. A. Dykman: No.

The Master: You mean testified in this proceeding before me, do you not?

Mr. Cummings: No, I mean in other proceedings.

Q. Have you testified——

Mr. J. A. Dykman: I object to this examination, sir.

Q. (Continuing:) —in another proceeding that in making up the journal entries of the Brooklyn Union Gas Company you added in all about——

Mr. J. A. Dykman: I object.

Q. (Continuing:) —$3,000,000.

The Master: Wait a moment, I want to permit counsel to interpose his objection and to state it.

Mr. Cummings: But not before I ask my question. I want to state my question first.

The Master: He asked permission to interrupt you, and I will grant permission to him to interrupt you and hear his objection.

Mr. Cummings: That is an unusual proceeding, sir.

The Master: Yes, it is unusual because the form of the question, as far as you have proceeded, indicates that it may

be objectionable even to continue it, and I will hear the objection.

Mr. Cummings: Give me an exception to that, I insist upon my right to formulate the question.

The Master: I will hear the objection.

Mr. J. A. Dykman: I object, sir, first to the form of the [fol. 419] question; I object also that it is incompetent, irrelevant and immaterial to ask this witness what he has testified, in any other proceeding, at this time in this proceeding.

The Master: I sustain the objection.

Mr. Cummings: Exception.

Q. In making up the different Brooklyn Union Journal entries was there or was there not annexed to the value of the mains, as stated in the original journal entries, $3,000,000 for the franchises and rights?

Mr. J. A. Dykman: I object to that, sir, as improper examination, upon books not in evidence; as immaterial, irrelevant and incompetent.

The Master: Objection overruled.

Mr. J. A. Dyckman: Exception.

A. An item of franchises and rights did appear in the opening entries of the Brooklyn Union Gas Company.

Q. Did that entry for franchises and rights represent the right to make and sell gas?

Mr. J. A. Dykman: I object to that, sir, on the ground it is incompetent, irrelevant and immaterial and as calling for the witness' conclusion. He has already testified that he does not know.

The Master: I think the question calls for a fact. Perhaps it might have been preceded by a question as to whether this witness knows, but that is not essential. If he does not know, he can say so. I overrule the objection.

A. I do not know.

[fol. 420] Q. If you testified that it did so represent——

The Master: You mean testified at this hearing?

Mr. Cummings: No, at previous hearings, other hearings.

Mr. J. A. Dykman: That is objected to on the ground it is incompetent, irrelevant and immaterial.

The Master: Objection sustained.

Q. Mr. Staniford, was there an entry made in the journal, the opening journal of the Brooklyn Union Gas Company, for the right to be a gas company?

Mr. J. A. Dykman: I object to that, sir, as not the best evidence.

The Master: Objection sustained.

Mr. Cummings: Exception.

Q. Is there an item in Defendant's Exhibit No. 1, marked for identification, which was entered there for the right to be a gas company?

Mr. J. A. Dykman: The same objection.

The Master: Objection sustained.

Q. Your attention is directed to the item Franchises and Rights Account $35,000, which you have testified was entered as one of the initial entries in the books of account of the plaintiff, following the consummation of the transaction between that company and the Brooklyn Gas Light Company, as shown by the plaintiff. Do you know what properties are represented by that entry Franchises and Rights Account $35,000 and let your answer be yes or no.

A. Yes, sir.

[fol. 421] The aggregate of those items under that item of franchise and rights account is $3,050,000. I do not know whether that represents any property or not.

Q. Did you ever know whether it represented any property or not?

Mr. J. A. Dykman: I object to that as immaterial, irrelevant and incompetent.

The Master: I think I will sustain that objection.

Mr. Cummings: Exception.

Q. I show you page 1389 of your testimony before the Stevens Committee and ask you if at that time you did not testify——

Mr. J. A. Dykman: I would like to interpose an objection——

Mr. Cummings: Wait until I finish.

Mr. J. A. Dykman: I would like to make an objection now.

The Master: I sustain the objection.

Mr. Cummings: Exception.

Q. Did you know what that item represented, in the year 1905?

Mr. J. A. Dykman: Same objection.

The Master: Objection sustained.

The Master: Even so, how does that help me at this time to come to a conclusion? If he says he knew in 1905 and doesn't know now, how could I accept what he knew in 1905 and doesn't know now or says he knew then and doesn't know now, as a means of coming to a conclusion? How does that help me?

Mr. Cummings: If he testifies that he knew in 1905 what it represented, perhaps by reference to this it will refresh [fol. 422] his recollection.

Mr. Deegan: Within ten years after the occurrence of the act.

The Master: Of course it is very apparent that you are seeking to impeach the testimony of this witness.

Mr. Cummings: Well, perhaps I have gotten around to that point now, but that was not my original intention.

The Master: I think you are addressing yourself to impeaching this witness, and the effort of impeachment is not directed to his direct examination. If that be true, you have made him your own witness to that extent, and you are now trying to impeach your own witness. That is my view; am I wrong in that?

Mr. Cummings: I think you are, for this reason, that I am not trying to impeach him, I am trying to refresh his recollection by showing him what he had previously testified as to what that item represents. Now, he has testified, as I have indicated, that the item represents the right to be a gas corporation. He says now that he doesn't know, so I am pursuing this method to see if I cannot refresh his recollection. It is not impeaching him at all.

The Master: It is not?

Mr. Cummings: No, absolutely not. If he says it is one thing, I will have to be bound by his answer, except by calling his attention to this, that is all. Apparently the witness has forgotten.

The Master: I shall have to limit myself to ruling on [fol. 423] your questions.

I do not know whether the books of these constituent companies are now in the possession of the Brooklyn Union Company. I haven't any distinct recollection of ever having seen them, although I may have at some time or other, but I haven't any distinct recollection, except of course the Metropolitan books. But not since the time of the dissolution of the Company. I don't know whether the books of the Metropolitan Gas Light Company, they are now in the possession of the Brooklyn Union. I haven't seen them since the Brooklyn Union was formed. I do not remember ever having seen an inventory of the properties of the constituent companies, the vendor companies, required by the plaintiff.

I was not secretary of the Brooklyn Union Company. I have been vice-president of the Brooklyn Union Company since 1910. Prior to that I was assistant treasurer, for several years. I don't remember exactly how many years. I stated that I was a general clerk in the Company when the Brooklyn Union was formed. I went to Auditor from General Clerk. I did not see the books of these vendor companies while I was auditor.

The Master: I suggest to Mr. Cummings that he observe that custom and ask now if, in such a proceeding, at such a time, you were asked the following question and then get an answer.

By Mr. Cummings:

Q. Were you asked, Mr. Staniford, in the proceedings of the Joint Committee of the Senate and Assembly to [fol. 424] inquire into the gas and electric light companies in the City of New York, known as the Stevens Committee Investigation, I believe, the following question:

"Q. What was represented by the item franchise and rights I find in the case of the Brooklyn Gas Light Company $350,000?"

Mr. J. A. Dykman: I object to that, sir, as incompetent, irrelevant and immaterial, and improper cross-examination.

The Master: The objection is sustained.

Mr. Cummings: You sustain the objection to all of this, I assume, and then I am putting it in for the purpose of presenting the question further. Was that the understanding? I would like to state for the record that I offer to prove that upon the opening journal entries in the books of the Brooklyn Union the plant account was increased $5,000,000 for good will, over and above the entries in the books of the vendor companies, and, likewise, the street main account of those companies was increased between four and five million dollars for special franchise or the right to have the pipes in the street, and that there was also added $3,050,000 for franchise which has been designated by the Vice President of the present company, in 1905, to be the right to make and sell gas. I now ask the Master to allow me to prove these facts. You refuse to allow me to prove them?

Mr. J. A. Dykman: I take it that the Master is not going to rule on offers of proof.

Mr. Cummings: He is going to either grant the permission to prove it or refuse permission, I take it.

[fol. 425] Mr. J. A. Dykman: He is not going to rule on offers of proof. After the Master has expressed himself upon that point, I propose to move to strike this out. It seems to me the Master has indicated to Mr. Cummings before now that offers of proof of this sort, in the light somewhat of the story that we heard at recess of the late Mr. Justice Freedman's experience, are not proper.

The Master: I decline to entertain an offer of proof, but in that connection I feel constrained to say that the question which is confronting me at this time seems to be a matter of discretion in the order of proof, and such proof as Mr. Cummings has indicated in his offer may be presented in due course and consideration given to its competency and relevancy at that time. Just now the question is whether or not this cross-examination shall be allowed to enter that field and thus disturb the normal order of proof and, in the exercise of what I deem to be the discretion of the Master, I exclude it at this time, without prejudice to the competency or relevancy of the evidence if presented at the proper time and in the proper order of proof.

Mr. Cummings: I now ask the Master to take enough of the evidence to comply with the Equity Rule on these three

items of good will, special franchise and franchise, so that the question can be presented to the District Court.

The Master: The Master is of the opinion that the question already asked, the objection and the ruling are sufficient for that purpose.

[fol. 426] Mr. Cummings: I wish to call the attention of the Master to the fact that I have not touched on good will at all, which I understand was added to the plant account of the plaintiff.

The Master: I think it unnecessary to anticipate what the answer of the witness may or may not have been, in order to determine whether or not it is an abuse of discretion to allow counsel to enter upon that line of cross-examination at this time.

Mr. Cummings: I understand you refuse to allow me to proceed?

The Master: At this time. In this cross-examination, but that must not be construed into a ruling that the evidence at some other time may not be admissible, competent or relevant. The Master feels that he is concerned at this time almost entirely with the order of proof, and not with the competency or relevancy of the evidence.

Mr. Cummings: I take an exception to the ruling of the Master in not allowing me to proceed in questioning the witness regarding the item of good will, special franchise and franchises, and I except to this ruling that he allow me or refuse me to question the witness sufficiently to draw from him testimony in accordance with the Equity Rule so that it can be reviewed before the higher court.

The Master: Mr. Cummings, I am going to add, if you please, the thought that when the proper foundation for this evidence shall have been laid by the plaintiff companies, the attendance of this witness, the presence of the books of account referred to and by other records that are relevant, which ought to be available by the ordinary process [fol. 427] of the courts, subpoena, and subpoena duces tecum, notice to produce, and so forth—that until a situation such as that shall have been presented here upon the record, it would seem like an error for the Master to wander off into the field that you have indicated in the questions that you have asked. It is the condition of the record that is confronting me now.

Mr. Cummings: Yes, I want to state that the witness is here present in Court and is on the witness stand now, and at some subsequent time, whether his health will be such as to permit him to be a witness and testify to these facts, is unknown. I do know that he is available now.

Mr. J. A. Dykman: Is that all your cross, Mr. Cummings?

Mr. Cummings: Why, I have apparently been shut off.

Mr. J. A. Dykman: I just wanted to get on the record whether these gentlemen have finished their cross examination.

Mr. Cummings: I want to review the record, there has been so much put into the record in the nature of controversy between us, and there may be something else.

[fol. 428] The Master: I strike out so much of the testimony of this witness as purports to embody a copy of journal entries said to have been made by him, and all testimony of the witness with reference to the items constituting such alleged entries.

It is my understanding that the effect of striking out this portion of the testimony of the witness leaves the cross-examination in such form that it has been disclosed what connections this witness had with the vendor corporation and with the plaintiff corporation. It has been shown that certain entries in the books of account were made in the hand-writing of this witness. I recall nothing else that it is my intention to leave in the record as the result of the cross-examination.

Mr. Cummings: I want to take an exception to the Master's striking out.

ARTHUR F. STANIFORD

Cross:

I wrote those minutes of November 11, 1895, immediately or a very short time after the meeting. The wording was composed by me as I remember. Of course, it is impossible for me to remember every detail of something that occurred twenty-eight years ago. I did not have anything to do with the preparation of the minutes. I can't remember that I personally prepared the wording of the Minutes of the Meeting of the Board of Directors of the Metropolitan Gas Light Company on November 11, 1895. As a rule I prepared minutes myself. Portions of resolutions might have been

copied from other papers. I have no recollection of having [fol. 429] anybody submit to me a statement at that time that I copied this extract from for the minutes of the Board of Directors for the Metropolitan on November 11, 1895.

I have no knowledge of what the minutes of the Williamsburg Gas Light Company contain. The wording on Exhibit No. 86 pages 25, 26 and 27 seems to be almost identical. I cannot explain the similarity of the words between Nos. 86. and 90.

[fol. 430] December 19th, 1923.

FREDERICK R. WOGAN

Cross:

I am familiar with the properties operated by the vendor companies prior to and around 1895. The Fulton Municipal Gas Company made so-called water gas, carboretted water gas. The Williamsburg, I believe, made both kinds, both coal and water I believe. Oh, prior to 1895, I suppose about three or four times, I visited the Williamsburg plant in all. That would cover a period of a year and a half. I do not know positively what kind of gas the Nassau Company made just prior to 1895. I don't know what kind of gas the Equity made and the Citizens, they had retorts, they were making coal gas. The Metropolitan, they were making—I wouldn't be sure on that. I couldn't say definitely how long those companies making coal gas continue to make such a gas after this transfer in 1895. They are not making any to-day. The Brooklyn Gas Light Company made prior to 1895, coal gas entirely. I think a little less than a year that plant was used after the Brooklyn Union Company took it over, to make coal gas and then no gas was made there. The plant was shut down. It was not used at all for gas making purposes. After, I think, the latter part of 1896. I think it was September or October, somewhere around there. There was at this Brooklyn plant an entire set of gas making apparatus for making coal gas; that continued in the plant for some years. It remained there, not in use. I cannot say for sure when it was taken out. I have an idea, but I cannot say. It remained there for several years after that, but I cannot say.

[fol. 431] The plant was located on Hudson Avenue and the East River, next to the Navy Yard. The land was sold to the Brooklyn Edison Company. The Peoples plant had not been used, I think, for two or three years prior and during that time the Fulton Municipal Company, with which I had been connected, had been selling gas to the Peoples Company. The apparatus at the Peoples plant, I think it was an old gas—I think it was a coal gas apparatus, but I would not be sure. That plant was located on South 10th Street. I think it was the corner of South 10th Street and Kent Avenue. I think it was South 10th Street. That land was sold in 1896 or 1897, I forget which. I don't think it was in operation in 1892, but I cannot say for sure. I know in 1893 it was not in operation and not subsequent to that time. All of those vendor companies had their own separate commercial offices prior to this taking over by the Brooklyn Union and the Brooklyn Union Company continued to maintain all of those offices as Branch offices for a short period. There were two of them, the Peoples Company—their office on Myrtle Avenue was eventually given up and those accounts were, I think, divided—they were taken into the Brooklyn Branch, what they called the Brooklyn Branch, and partly in the Williamsburg—I think a few went into the Williamsburg. The Fulton Municipal Company, their office was given up in 44 Court Street and those accounts were absorbed in the regular—in the other branch offices—afterwards in operation, the Brooklyn Branch, what we called the Brooklyn Branch which took in the territory of the Brooklyn Gas Light Company, and part [fol. 432] of the Peoples and part of the Fulton, and the Citizens and Metropolitan, following the names of the companies, the Nassau and the Williamsburg. The Fulton Gas Company's accounts were absorbed by—they were over the whole city, the entire city, and their accounts were absorbed by all the different branches, all the five branches. I do not know to whom the $500,000 in bonds reserved for commissions and expenses at the time of the transfer shown on plaintiff's exhibit 62 was given. I do not know anything about how that was distributed or between whom. Prior to 1895 the authorized capital stock of the Fulton Municipal Gas Company was $2,100,000. I do not remember the authorized stock of the Brooklyn Gas Light Company at the same time. I cannot state positively that I

ever knew. I did not have any information as to the amount of the stock of the Metropolitan at that time. That statement does not refresh my memory as to the amount of capitalization of the different companies prior to the taking over by the Brooklyn Union. I was secretary to the President of the Fulton Municipal at the time of the transfer. I knew at that time that the transaction was taking place for the purchase and sale of these properties. I saw one or two letters, and that was the extent of my knowledge. That is all I remember. I was stenographer for the president. The president dictated a couple of letters in reference to it. There was a letter received, I think, from the Brooklyn Union Gas Company. I don't know of any other correspondence. All that I recall now is just one letter from the Brooklyn Union, relating to the purchase of the property and I think an answer by the president. The [fol. 433] letter referred to the purchase, is my recollection. I could not say what the amounts were. I did know, but I don't remember the amounts. I show it in this exhibit; I made it up from that. I cannot remember the figures. Exhibit No. 62 shows that the Fulton Municipal obtained $2,800,000 worth of bonds and $2,800,000 worth of stock. There isn't anybody alive who would know the details of the transfer of the properties. I know that in the allotment; I know that under the contracts; and I know that they were given over to the company—that that amount of stocks and bonds of the Brooklyn Union Company was given over to the Fulton Company. I do not know whether there was some percentage basis or something of that kind. I do not know how $2,850,000 worth of stocks and bonds was arrived at. I do not know the basis which formed the transfer in relation to the other companies, vendor companies, or how the price was arrived at. As far as I know there is no one now in the company that knows any more about it than I do. I do not know whether at the time of the transfer there was an inventory of the properties of the vendors made. I never saw such an inventory either in my office—that is the Fulton Municipal office—or in the office of the Brooklyn Union Company. If there was such an inventory made, I might have seen it, but not necessarily. If I had seen it I would recall it. I have no recollection of

ever having see*ing* it. I have never ever seen a valuation of the properties of the vendors made. I have no recollection of having heard or seen a valuation of the vendors property. As far as I know there was none. There are [fol. 434] no officers of the *of the* Fulton alive, with the exception of Mr. Stanford, who was secretary of the Metropolitan; none of the officers of the other companies are alive. These vendor companies were competing companies; they supplied the same territory and infringed upon each other's territory. The Fulton Municipal supplied from 60th street and the City Line of the old 30th Ward down to Newton Creek. They supplied up to the 30th Ward line and they supplied the whole City of Brooklyn. The Fulton Company supplied the consumers in the district of every company. They had consumers in the district of every company, and then the Nassau Company was supplying in the Brooklyn territory and the Brooklyn supplied in the Nassau; and the Nassau went into the Williamsburgh, I think, and the Williamsburgh went into the Brooklyn. They were all competing companies and they overlapped. They got business wherever they could get it. Two sets of mains in the same streets, frequently; more than two in a given street. There might have been three, I think. I can recall on Fulton Street at one place where there was three, and Lafayette Avenue. In the greater portion of the territory there was the Metropolitan Company that, we will say, supplied the greater part of the Metropolitan District which ran from Atlantic avenue south and went up to the park, and they went, I think, to somewhere about the canal, the Gowanus Canal. The Citizens Gas Company supplied from Atlantic avenue south down to Red Hook. The Williamsburgh Company supplied the other side of Broadway, right down to Newton Creek. Those companies generally respected, I think, each other's territory. They overlapped [fol. 435] on the lines. But the Fulton Company was the competing company of them all and covered or traversed the whole city. That was the latest company. I think about '76 or somewhere around there and made water gas. I cannot remember how many consumers the Fulton Company had. I cannot remember how many miles of mains, or any of those details. I do not know that there is in existence anywhere today the data showing the number of

consumers and the miles of main of the various vendor companies.

The Citizens Works party occupied the land that is now occupied by your Citizens Branch. Of course, there have been additions; we purchased some since. Just recently purchased some land at the Citizens Works, alongside; quite a few parcels of land, and the Fulton Municipal works occupied the same property which is now occupied by the Fulton Branch. Yes, the Fulton Municipal Company had its works at practically the same location as the Fulton works and that is true of the Williamsburg, the Nassau, and the Metropolitan. The works property of the Brooklyn Gas Light Company had been dismantled and disposed of, but not the holder, and likewise the works of the Peoples. We have some that we called the Union. They called it the Union Station. The Union Gas Light Company as the Union and the Citizens Gas Light Company consolidated I think in 1891 into the Citizens Gas; but they had a station out there that they called the Union Station. That was out at Atlantic Avenue and Ashford Street, where the Citizens Branch is now. That is the East New York section. [fol. 436] We have no works there now. We had two manufacturing stations, one down at the Canal, down where they are now, what we call the Citizens works now, and the other was the Union Station out at East New York. The property has not been disposed of. We still occupy the land. I do not know what kind of gas they were making out there, in 1895. I know the Brooklyn was manufacturing gas known as coal gas, the coal gas process. My recollection of the other plants is not thorough enough to say absolutely what they were making. I know two of them, then, the Brooklyn and the Citizens were making coal gas. I am not absolutely sure of the others.

Just prior to 1895, there was a series of reductions and we had what is known as a rate war among the companies, and one would reduce and then another would reduce; and then the price would be put back, I think, and then there would be another war, the war would break out again, and there was another reduction, if I remember right. I do not know whether that was the motive which led to the purchase of these seven companies—because of the existence of this so-called gas war or rate war. Of course, I do not abso-

lutely know, because I do not know the details to that extent; but that was my understanding. That is my understanding, that the Brooklyn Union Company—the vendee company—appointed a committee to interview the vendor companies with the idea of purchasing their properties, but I do not know whether the committee was Mr. George W. Young and Mr. Turnbull and Mr. Dickerman, but I have a knowledge of that from reading the minutes of the Brook- [fol. 437] lyn Union Company, that is all. I know there was a committee of the Fulton. That is all I do know. At the time the Fulton Company was taken over, I think they had a good set of books showing the details of their manufacture and also of their fixed capital accounts. They kept books of account in which were recorded their capital investment and cost of manufacture, and their sales in the ordinary course of business. When the company was taken over by the Brooklyn Union, I do not know what became of the books. Mr. Rossiter was the secretary of our company. I remember the day Mr. Rossiter brought in the minute books but I never saw Mr. Rossiter bring in these other books. I made no inquiry of him as to what became of the other books. I was not concerned with that at all. I have never seen the Fulton Muncipal Books since I have been connected with the Brooklyn Union. They might be there and still I would not know about it. I know there were some old books. I have seen books of the old companies. I do not know what they show. I have seen the minute books and a lot of other books, but what they are I do not know. They appeared to be books of account; I saw them I think in 1906 or round there. They were delivered. I saw them delivered to the Commission—I think it was of Gas and Electricity. The commission previous to the Public Service Commission. They called for the books of the vendor companies. I remember them getting them back. I cannot identify the various books of the companies that were delivered to the Commission of Gas and Electricity. I just [fol. 438] know they were some books of some vendor companies. There is no record or memorandum recording what books were given to the Commission of Gas and Electricity, at the time I referred to, in the records of the Brooklyn Union Gas Company or in their archives. I have never seen them. There is no record of the books returned to

the Brooklyn Union Gas Company by the Commission of Gas and Electricity—at a subsequent time. I have never seen them. The books that were so returned by the Commission of Gas and Electricity are in one of our vaults. At the time those books were returned they were put up in the attic at 180 Remsen Street. That was our building then, 180 Remsen Street. They were up there for some years and the attic was cleaned out, and some books—I do not know which particular books—whether they were all the books or not; but the books were put in boxes and put down in the basement or in the cellar of 180 Remsen Street, and eventually after we went into the new building, sometimes after, the cellar of 180 Remsen street was cleaned out, and these books that were in these boxes were all packed up or sent up to the vault in our office building. To the best of my understanding those are the books. I think what is there now constitutes the books that were returned to the Brooklyn Union Gas Company by the Commission of Gas and Electricity. I don't know absolutely. I did not handle the books; I did not have anything to do with them. The auditor, Mr. Gilmer, had charge of the transfer of the books from the Brooklyn Union to the Commission. The Commission retained them before they returned them. I think a couple days.

[fol. 439] As to how many shares of stock were outstanding, of the vendor companies, at the time of the purchase by the Brooklyn Union, I do not know. I have a recollection of the Fulton, but I could not tell you without refreshing my memory what the outstandings of the others were. I don't know who would know in the company now how much stock was outstanding in the vendor companies at the time of their purchase by the Brooklyn Union. I do not know anyone in the company now who knows any more about that than I do. At the time of the purchase of these properties by the Brooklyn Union Company, after their purchase they had no more manufacturing facilities or any more street mains than the seven original companies had. After they got through with the transaction they had the same properties that the vendor companies had. As shown on Exhibit No. 62 the bonds and stocks were distributed by the New York Guaranty & Indemnity Company. That was the depository. There was $500,000 of bonds reserved for

commissions and expense incurred in the transfer of the properties. I don't know who got it. Jesse Johnson represented the Fulton Municipal Company at that time. Simpson, Thatcher & Barnum represented the purchaser, the Brooklyn Union Company. I do not know what individual of that firm handled the transaction on behalf of the Brooklyn Union. Mr. W. N. Dykman was a director of the Peoples. That is the one that was not operating its plant. $500,000 worth of these bonds was reserved for betterments or extensions. That $500,000 was taken to purchase the stock in the Equity Company and that was purchased some time subsequent to the formation or the transfer of the [fol. 440] properties. I think in 1896, that is, about a year after the purchase of these seven companies, they took this $500,000 and purchased the stock and bonds of the Equity. That company still retains its separate corporate identity. I do not know of any lease of property. I do not know whether any of these vendor companies paid anything to the municipal authorities for the right to occupy the streets of the City. I don't know of anybody with the company now that would know whether anything was paid for that right. Our first bond issue of the Brooklyn Union Gas was $15,000,000 and those were five per cent bonds. They were issued along about the time of the purchase in 1895 and are still on the market today. Our next issue of securities was $3,000,000 of debenture bonds in 1904, which were converted into stock in 1907 and 1909. Some in 1907, and I think the balance under date of maturity in 1909. These $300,000 of bonds were convered into stock, making $18,000,000 of stock. At the close of the transaction in 1895 it had $15,000,000 of bonds, of which I think $3,900,000 were held by the trustees to retire the outstanding bonds and including that it had $15,000,000 of stock. Subsequently there was an issue of $3,000,000 debentures, and the $3,000,000 debentures were subsequently converted into stock, making a capital stock of $18,000,000 and still the $15,000,000 of stock were outstanding. That carries us down to 1919. That is the condition of affairs in 1919. All of the $15,000,000 of stock went to the vendor corporations in these transactions in 1895. All of the $15,000,000 of bonds went to the vendor corporations in these transactions of 1895, with the exception of [fol. 441] $500,000 reserved for betterments and that went

to purchase the Equity. All of the bonds except the two $500,000 items there, that is in other words, $14,000,000 of bonds went to the stockholders of the vendor companies with the exception of those that were held for the retirement of the vendor companies' bonds.

The Brooklyn Union Gas Company was organized for the purpose of acquiring these properties in 1895; it had no prior corporate existence.

The percentage of those $3,000,000 bonds were 6 per cent bonds. They were issued in 1904 and then converted in 1904; they had a conversion privilege in 1907, and any time up to the maturity in 1909. The majority were converted in 1907 and some of them in 1909.

Our issue of bonds was $2,000,000 convertible debentures in—I think that was May, 1919 and those were 7 per cent bonds. That was in 1919. Those bonds are all outstanding. The convertible privilege there is to be operative in November, 1924. They were issued in November, 1919. They can convert them into Brooklyn Union stock at par.

The next issue was an issue of $6,000,000 six per cent first lien and refunding bonds in 1922, May 1922, and at the same time there was also issued $5,579,000 of seven per cent debenture bonds. Those are due 1932. The $2,000,000 debenture bonds were isued in November 1919. The privilege of converting into capital stock of the last issue of seven per cent convertible bonds is November 1924. They can at that time be converted into capital stock at par. The present stockholders of the company were given the privi- [fol. 442] lege of subscribing to each of these issues—the stockholders at that time. They were given a preferential right, on a pro rata basis, according to their holdings. In the case of the $2,000,000 the basis was eleven per cent. In the case of the $5,579,000 I think, it figured out 31 per cent, I think that was it. It figured around that. There were some fractions, but about eleven per cent and about 31. No brokerage firm had the handling of our last two debenture bonds. That was handled by the company itself. The first lien and refunding bonds, gold bonds, were sold to the National City Company and they put them out to the public. They were sold at a premium to the National City. They were offered to the public I think it was in June 1922, the latter part of May or early in June. We sold them at

a premium of, I think, 102. I forget what the price was. The 7 per cent debenture bonds were all taken by the stockholders. On those last 7 per cent debentures there were just a few—a few of the fractions were not taken by the—some of the stockholders did not take advantage of their fractional rights, and those amounted to a small amount which we in turn offered to the employees of the company, the privilege of subscribing for the unissued balance. All these bonds and stock are listed in on the Stock Exchange.

At the time of the taking over on November 4th, 1895 by the Brooklyn Union Company of the properties of the vendor companies, the Brooklyn Union Company did not have any other property except what it required from the vendor companies.

[fol. 443] After the purchase of the vendor companies, I do not know of any inventory or appraisal made by the Brooklyn Union Company of the properties that they had purchased of these vendor companies. The stock was delivered to the stockholders of the vendor companies by the—New York Guaranty and Indemnity Company. I suppose they had a list at that time of those vendor companies. I don't know. I don't know who supplied that list to them. I have no knowledge on that subject at all. I don't know who has any knowledge on that subject, who supplied the list of the vendor stockholders.

These minute books of the vendor companies that have been produced here in court, were kept separate and apart form the other books of account of the vendor companies in a vault in 180 Remsen street, separate and apart. They were kept by the secretary among papers he had. I had these minutes books rebound, but I have no other recollection of having the other books of account of the vendor companies rebound.

Redirect:

I know the stock of the Fulton was dealt in on the market prior to the sale the stock of the vendor companies was. I know the other stock was dealt in on the market that fluctuated. The basis of my knowledge as to market value of the stock of the Fulton Municipal Gas Company was my recollection of what was sold for at the time, what sales were made, what it was selling for. I got the information from

the daily press as of that time. This is the full extent of my knowledge as listed in the Eagle Almanac. My knowl-
[fol. 444] edge of the market value at the time of this purchase of the stock of other vendor companies than the Fulton Municipal is based on the Eagle Almanac. With reference to these old books which I stated were delivered to the Gas Commission, I never saw the inside of them. The testimony I have given is based upon the outside appearance of those books. I do not know anybody who has ever seen the inside of them lately.

Plaintiff's Exhibit No. 84, the book of minutes of the Brooklyn Gas Light Company, 1893 to 1895, page 118 and the top of page 119, the minutes of a special meeting of the Board of Directors held Wednesday, October 2, 1895; pages 120, 121, 122 and 123, the minutes of a meeting of the Board of Directors held October 9, 1895, and pages 124, 125, 126, 127 and 128, minutes of meeting of the Board of Directors held October 16, 1895, the Mr. Pettit whose signature appears at the end of each of those minutes, is the same Mr. Pettit as to which I testified the other day. He was Secretary of the Brooklyn Gas Light Company. If I were asked the same questions with reference to these minutes as I was asked the other day with reference to the minutes of the meeting of November 13, 1895, I would make the same answers. Plaintiff offered from book originally marked Plaintiff's Exhibit No. 84 for identification, the minutes of the meetings of the Board of Directors held October 2, 9 and 16, 1895, contained on pages 118, 119, 120, 121, 122, 123, 124, 125, 126, 127 and 128.

(Pages 118 to 128, inclusive, in Plaintiff's Exhibit 84 for identification received and marked Plaintiff's Exhibit 84.)

Referring to the book entitled "Minutes 1891-1896 the Citizens Gas Company," which was originally marked
[fol. 445] Plaintiff's Exhibit 85 for Indentification, at pages 65 and 66, which contains the minutes of a special meeting of the board of directors of the Citizens Gas Company, held October 2, 1895, and also at pages 67, 68, 69, 70, 71 and 72, the minutes of the meeting held October 9, 1895, also at pages 73, 74, 75, 76, 77, 78, 79, 80, 81, 82 and 83 and 84, which contain the minutes of an adjourned meeting of the board of directors held October 16, 1895, I am familiar with

the signature of Mr. T. B. Criss, who signs as secretary. I believe he is dead. If I were asked now the same question with reference to this book and these minutes that I was asked the other day I would also make the same answer.

Plaintiff offered from this book, which was originally marked Plaintiff's Exhibit 85 for identification the pages which I have questioned the witness about, pages 65 to 84, inclusive.

Exception.

Pages 65 to 84, inclusive of Plaintiff's Exhibit No. 85 are received in evidence.

With reference to a book entitled "Minutes 1895-1896 Williamsburgh Gas Light Company," originally marked Plaintiff's Exhibit 86 for Identification at pages 1, 2, 3, 4 and 5 being the minutes of a meeting of the board of directors of the company held October 9, 1895; also at pages 6, 7, 8, 9, 10, 11, 12 and 13 and the top of 14, being the minutes of a meeting held October 16, 1895, the signature of C. W. Blodget, as secretary at the end of each one of those minutes is the signature of the same [fol. 446] Mr. Blodget as to whose signature on page 27 I have already testified, and whether if I was asked the same questions with reference to him and to these minutes that I was asked with reference to the other minutes the other day, I would make the same answers.

Plaintiff offered from book pages 1, 2, 3, 4, and the top of 5, being the minutes of October 9, 1895; also pages 6, 7, 8, 9, 10, 11, 12, 13 and the top of page 14, being the minutes of a meeting held October 16, 1895.

There is an intervening short meeting at which nothing with reference to this transaction took place. I do not know whether the minutes referred to by Mr. Dykman accurately describe the facts set forth therein.

Objection on the ground that that is nothing but hearsay.

Pages 1 to 5 and 6 to 14, referred to, of Plaintiff's Exhibit No. 86, are received in evidence.

Referring to a book entitled, "Minutes 1879-1896 Fulton Municipal Gas Company," originally marked Plaintiff's Exhibit 87 for Identification, at pages 409 and 410, the minutes of a directors' meeting held October 3rd, 1895; also at pages 411, 412, 413, 414, 415 and 416, minutes of a meeting of the board of directors held October 10th, 1895; also at pages 417, 419 and 420, the minutes of a meeting of the directors held October 17th, 1895; also at pages 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433 and 434, being the minutes of a meeting of the stockholders [fol. 447] of the company held November 4th, 1895, at the end of each one of these minutes the signature is that of Mr. Rossiter, as to which I testified the other day, if asked the same questions with reference to these minutes that I was asked then with reference to the minutes of November 18th, 1895, I would make the same answers. Plaintiff offered from book originally marked Plaintiff's Exhibit 87 for Identification the minutes of the directors meeting held October 3rd, 1895, October 10th and October 17th, and the stockholders meeting held November 4th, 1895, contained on page 409 et seq., and the reason why I have to offer the stockholders meeting here is because the contract is omitted from the directors meeting minutes with a notation that it is contained in the stockholders minutes.

Objection.
Exception.

Pages 409, 411 to 416, 417, 419, 420, 422 to 434, referred to, in Plaintiff's Exhibit No. 87, are received in evidence.

In regard to book entitled "Minutes 1884-1896 Peoples Gas Light Company," originally marked Plaintiff's Exhibit 88 for Identification, at pages 167 to 180, inclusive, containing the minutes of meetings of the board of directors of the company held October 3rd, 10th, 15th and 24th, 1895, if asked the same questions with reference to these minutes that I was asked the other day with reference to the minutes of the meeting held November 19th, 1895, and received in evidence, I would make the same answers. Plaintiff offered from this book the minutes of meetings

[fol. 448] of the directors held October 3rd, 10th, 15th and 24th, 1895, contained on pages 167 to 180 inclusive.

Objection.
Exception.

Pages 167 to 180, inclusive, referred to, in Plaintiff's Exhibit No. 88, are received in evidence.

Book entitled "Minutes 1894-1896 Nassau Gas Light Company," originally marked Plaintiff's Exhibit 89 for Indentification at pages 30, 31, 33 to 36, and 46 and 48, being minutes of the meetings of the board of directors of the company held October 3rd, 18th and November 4th, 1895, if asked with reference to these minutes the same questions that I was asked the other day with reference to the minutes of the meeting held November 30th, 1895, I would make the same answers.

Objection.
Exception.

Pages 30, 31, 33 to 48 referred to, in Plaintiff's Exhibits No. 89 are received in evidence.

Plaintiff offered Exhibits Nos. 2, 3, 4, 5 and 6 for Identification being the minutes of the meetings of the directors of Brooklyn Union Gas Company, held September 10th, 30th, October 2nd, 19th, and November 1st, 1895, as to which the witness has already testified, and identified them. It is the same transaction on the part of the Brooklyn Union Company.

Objection. Objection overruled.
Exception.

Plaintiff's Exhibits for Identification Nos. 2, 3, 4, 5, and [fol. 449] 6 are now received in evidence.

* * * The price of gas to consumers preceding the purchase in 1895 of the vendor companies remained at $1.25 per thousand, and it was at the time of purchase by the Brooklyn Union Company and remained at that price until 1901, I think. In 1895, before the purchase by the Brooklyn Union Gas Company, the vendor companies were charging to the best of my knowledge $1.25 per thousand.

A uniform price among all the vendor companies of $1.25 per thousand, at which price it remained, and the Brooklyn Union charged the same price in 1895 and for some years subsequent. The price of $1.25 was charged, I think, by those companies a very few months before in the latter part of 1895, they put a uniform price of $1.25 in existence and the Brooklyn Union Company retained that price. The price by those vendor companies in the early part of 1895 ran at various prices. I forgot what the minimum was. The maximum was $1.25. * * *

[fol. 450] Recross:

The vendor companies were charging 90 cents just shortly before the purchase of the vendor companies. I think the price was raised to $1.25 just—now, I would not be sure whether the price was raised to $1.25 exactly after or whether it happened a month before, but I know it was just about the time of the purchase. Whether it was just before or immediately after I could not be sure. I am not sure of the exact time. * * *

[fol. 45] I think I have seen Mr. Mitchell sign his name in different ways at different times. I have seen him sign it as a signature "E. D." and write it out. I think the signature at the top of page 178 is the signature of Mr. E. D. Mitchell, whom I knew and with whose writing I have testified that I was familiar. I could not say definitely at the bottom of page 171 whether the signature signed there is Mr. Mitchell's signature. In my opinion it is his signature at page 179 at the top. I think that is the signature on page 180 "Edward D. Mitchell."

These old minute books were rebound, within the last year, and when they were so rebound, the paging now is exactly the same, with the same number of pages. Just a cover, that is all, was added.

I have a tabulation of deeds to offer. The deeds contained in this tabulation in evidence and propose to hand the tabulation to the stenographer to copy into the record with the suggestion that he shall give each deed on the tabulation a separate exhibit number. In other words, we save my reading each one off, by doing it this way.

No objection.

Plaintiff offered in evidence the following exhibits:

Land Grant to Williamsburg Gas Light Company, dated March 11, 1892, recorded in Register's Office, County of Kings, in Liber 2101, page 485.
[fol. 452] (Received and marked Plaintiff's Exhibit No. 91.)

Anna M. Horton, deed dated March 4, 1902, recorded in the office of the Register, March 4, 1902, Liber 15, page 368, Sec. 1, Block 33.
(Received and marked Plaintiff's Exhibit No. 92.)

City Real Estate Co., deed dated March 24, 1904, recorded in the Office of the Register of Kings County, March 24, 1904, Liber 45, page 330, Sec. 4, Block 1025.
(Received and marked Plaintiff's Exhibit No. 93.)

John P. Carroll, deed dated October 2, 1905, recorded in the office of the Register of Kings County, June 25, 1905, Liber 3015, page 309, Sec. 2, Blocks 471-473-475.
(Received and marked Plaintiff's Exhibit No. 94.)

Alexander Doerks and wife, deed dated February 15, 1906, registered February 21, 1906, Liber 43, page 416, Sec. 12, Block 3751.
(Received and marked Plaintiff's Exhibit No. 95.)

Eunice Kirkwood, deed dated Feb. 19, 1906, registered February 20, 1906, Liber 43, page 403, Sec. 12, Block 3751.
(Received and marked Plaintiff's Exhibit No. 96.)

City Real Estate Company, deed dated March 31, 1908, registered April 8, 1909, Liber 3076, page 178, Sec. 4, Block 1025.
(Received and marked Plaintiff's Exhibit 97.)

[fol. 453] Charles Essing and wife together, deed dated May 21, 1908, registered May 22, 1908, Liber 3074, page 444, Sec. 4, Block 1025.
(Received and marked Plaintiff's Exhibit 98.)

City Real Estate Company, deed dated May 20, 1908, registered May 22, 1908, Liber 3074, page 443, Sec. 4, Block 1025.
(Received and marked Plaintiff's Exhibit 99.)

Michael O'Connor, deed dated December 1, 1910, registered December 2, 1910, Liber 3254, page 305, Sec. 4, Block 1025.

(Received and marked Plaintiff's Exhibit 100.)

City Real Estate Company, deed dated December 8, 1910, registered December 13, 1910, Liber 3262, page 358, Sec. 4, Block 1025.

(Received and marked Plaintiff's Exhibit 101.)

Richard S. Hager and wife, deed dated February 16, 1911, registered June 20th, 1911, Liber 3308, page 2, Sec. 4, Block 1007-A.

(Received and marked Plaintiff's Exhibit 102.)

Richard S. Hager and wife, deed dated June 19th, 1909, registered May 20th, 1910, Liber 3226, page 280, Sec. 8, Block 2288.

(Received and marked Plaintiff's Exhibit 103.)

Richard S. Hager and wife, deed dated June 19th, 1909, [fol. 454] registered May 20, 1910, Liber 3226, page 268, Sec. 8, Block 288.

Received and marked Plaintiff's Exhibit 104.)

Richard S. Hager and wife, deed dated August 8th, 1910, registered August 9th, 1910, Liber 3239, page 306, Sec. 8, Block 2288.

(Received and marked Plaintiff's Exhibit No. 105.)

Richard S. Hager and wife, deed dated June 2nd, 1909, registered May 20th, 1910, Liber 3226, page 279, Sec. 8, Block 2288.

(Received and marked Plaintiff's Exhibit No. 106.)

Richard S. Hager and wife, deed dated May 12, 1910, registered May 20th, 1910, Liber 3226, page 278, Sec. 8, Block 2288.

(Received and marked Plaintiff's Exhibit 107.)

William Wharton, deed dated May 31, 1911, registered April 3, 1911, Liber 3291, page 1, Sec. 4, Block 999.

(Received and marked Plaintiff's Exhibit 108.)

City Real Estate Company, deed dated June 9, 1911, registered July 19, 1911, Liber 3308, page 339, Sec. 4, Block 1025.

(Received and marked Plaintiff's Exhibit 109.)

American Agricultural Chemical Company, deed dated December 19, 1911, registered December 22nd, 1911, Liber 3334, page 88, Sec. 2, Block 471-A-475.

(Received and marked Plaintiff's Exhibit No. 110.)

[fol. 455] William B. Greenman, and others, deed dated December 29, 1911, registered January 11, 1912, Liber 3345, page 93, Sec. 7, Block 2015.

(Received and marked Plaintiff's Exhibit 111.)

Realty Associates, deed dated February 14, 1912, registered February 14, 1912, Liber 3339, page 471, Sec. 1, Block 255.

(Received and marked Plaintiff's Exhibit 112.)

Josephine F. Paul, deed dated March 28, 1912, registered April 2nd, 1912. Liber 3357, page 90, Sec. 1, Block 255.

(Received and marked Plaintiff's Exhibit 113.)

City Real Estate Company, deed dated March 16, 1914, registered May 25, 1914, Liber 3484, page 348, Sec. 4, Block 1023.

(Received and marked Plaintiff's Exhibit 114.)

Elizabeth Gorman, deed dated May 23, 1914, registered May 25, 1914, Liber 3484, page 547, Sec. 4, Block 1025.

(Received and marked Plaintiff's Exhibit 115.)

Chauncey Real Estate Company, deed dated January 19, 1915, registered April 11, 1917, Liber 3664, page 6, Sec. 2 Block 426.

(Received and marked Plaintiff's Exhibit 116.)

Benjamin P. Alexander, Referee, deed dated March 28th, 1916, registered March 30, 1916, Liber 3593, page 642, Sec. 7, Block 2015.

(Received and marked Plaintiff's Exhibit 117.)

[fol. 456] Richard S. Hager and wife, deed dated August 9, 1916, registered April 6, 1917, Liber 3662, page 29, Sec. 2 Block 419.

(Received and marked Plaintiff's Exhibit 118.)

Richard S. Hager and wife, deed dated August 31st, 1916, registered April 5th, 1913, Liber 3662, page 28, Sec. 2, Block 419.

(Received and marked Plaintiff's Exhibit 119.)

Richard S. Hager and wife, deed dated October 3, 1916, registered April 6th, 1917, Liber 3662, Page 33, Sec. 2, Block 419.

(Received and marked Plaintiff's Exhibit 120.)

Richard S. Hager and wife, deed dated October 6th, 1916, registered April 6th, 1917, Liber 3662, Page 32, Sec. 2, Block 419.

(Received and marked Plaintiff's Exhibit 121.)

Richard S. Hager and wife, deed dated October 6th, 1916, registered April 6th, 1917, Liber 3662, Page 31, Sec. 2, Block 419.

(Received and marked Plaintiff's Exhibit 122.)

Richard S. Hager and wife, deed dated October 24th, 1916, registered April 6th, 1917, Liber 3662, page 30, Sec. 2, Block 419.

(Received and marked Plaintiff's Exhibit No. 123.)

Henry P. Chilton to Equity Gas Company, deed dated May 22, 1896, registered July 1st, 1896, Liber 3, Page 333, Sec. 10, Block 2888-2898-2927.

(Received and marked Plaintiff's Exhibit 124.)

[fol. 457] City of New York, deed dated February 7, 1919, registered April 16, 1919, Liber 3774, page 550, Sec. 2, Block 469-A.

(Received and marked Plaintiff's Exhibit 125.)

Deed to City of New York, dated January 17, 1918.

(Received and marked Plaintiff's Exhibit 126.)

Richard S. Hager and wife, deed dated December 29, 1921, registered July 27, 1922, Liber 4171, Page 360, Sec. 2, Block 468A.

(Received and marked Plaintiff's Exhibit 127.)

United States of America, deed dated April 7, 1921, registered October 31st, 1921, Liber 4088, Page 59, Sec. 8, Block 2287.

(Received and marked Plaintiff's Exhibit 128.)

Richard S. Hager and wife, dated May 15, 1922, registered May 25th, 1922, Liber 4145, Page 589, Sec. 2 Block 469A.

(Received and marked Plaintiff's Exhibit 129.)

Richard S. Hager and wife, deed dated September 30, 1916, registered July 26th, 1922, Liber 4166, Page 258, Sec. 2 Block 468-A.

(Received and marked Plaintiff's Exhibit 130.)

Richard S. Hager and wife, deed dated December 31, 1921, registered July 27, 1922, Liber 41721, Page 359, Sec. 2, Block 468A.

(Received and marked Plaintiff's Exhibit 131.)

Richard S. Hager and wife, deed dated January 28, 1922, registered July 27, 1922, Liber 4171, Page 365, Sec. 2, Block 468A.

[fol. 458] (Received and marked Plaintiff's Exhibit 132.)

Richard S. Hager and wife, deed dated January 30, 1922, registered July 27, 1922, Liber 4171, Page 361, Sec. 2, Block 468A.

(Received and marked Plaintiff's Exhibit 133.)

Richard S. Hager and wife, deed dated February 28, 1922, registered July 27, 1922, Liber 4171, Page 356, Sec. 2, Block 468A.

(Received and marked Plaintiff's Exhibit 134.)

Richard S. Hager and wife, deed dated March 1, 1922, registered July 27, 1922, liber 4171, Page 357, Sec. 2, Block 468A.

(Received and marked Plaintiff's exhibit 135.)

Richard S. Hager and wife, deed dated March 16, 1922, registered July 27, 1922, Liber 4171, page 364, Sec. 2, Block 468A.

(Received and marked Plaintiff's Exhibit 136.)

Richard S. Hager and wife, deed dated March 31st, 1922, registered July 27, 1922, Liber 4171, Page 363, Sec. 2, Block 468A.

(Received and marked Plaintiff's Exhibit 137.)

Richard S. Hager and wife, deed dated April 5, 1922, registered July 27, 1922, Liber 4171, page 358, Sec. 2, Block 468A.

(Received and marked Plaintiff's Exhibit 138.)

Richard S. Hager and wife, deed dated April 10, 1922, registered July 27, 1922, Liber 4171, page 362, Sec. 2, Block 468A.

(Received and marked Plaintiff's Exhibit 139.)

Joseph W. Catherine and wife, deed dated June 10, 1922, [fol. 459] registered July 27, 1922, Liber 4171, page 365, Sec. 2, Block 468A.

(Received and marked Plaintiff's Exhibit 140.)

Richard S. Hager and wife, deed dated July 29, 1922, registered July 27, 1922, Liber 4171, page 357, Sec. 3, Block 468A.

(Received and marked Plaintiff's exhibit 141.)

Richard S. Hager and wife, deed dated July 24, 1923, registered July 27, 1922, Liber 4171, page 361, Sec. 2, Block 468A.

(Received and marked Plaintiff's exhibit 142.)

The Brooklyn Improvement Company, deed dated October 15, 1923, registered October 15, 1923, Liber 4319, page 176, Sec. 4, Block 977A.

(Received and marked Plaintiff's Exhibit 143.)

Richard S. Hager and wife, deed dated June 7, 1923, registered June 9, 1923, Liber 4277, page 31, Sec. 4, Block 999.

(Received and marked Plaintiff's Exhibit 144.)

[fol. 460] BENJAMIN W. MESEROLE

Direct:

I am a city surveyor. I was recently furnished with a number of deeds by The Brooklyn Union Gas Company and asked to survey the properties embraced therein. I visited the various parcels of property and made surveys. Sheets 1 to 15 in Plaintiff's Exhibit 145 for Identification were prepared in my office under my supervision and correctly show the result of the survey of the particular property shown on each map surveyed in accordance with the deeds.

RALPH LUDLAM

Direct:

I am a city surveyor. I was recently furnished with deeds by the plaintiff and at its request surveyed the properties embraced therein. I went to the various parcels and made a survey. Sheets 16 to 25, inclusive, in Plaintiff's Exhibit 145 for Identification, were prepared in my office under my supervision from data in the office, the deeds and my surveys and accurately show the results of my survey of the particular parcels.

Plaintiff's Exhibit 145 for Identification consisting of 25 sheets received in evidence.

[fol. 461] WILLIAM M. GREVE, being sworn, testified as follows:

I have lived in Brooklyn 33 years. I am President of the Realty Associates, Prudence Company and Rockaway Point Company and am a director of Realty Associates and Prudence Company and on the Executive Committee of both. I am an officer and director of probably 20 other real estate concerns. My occupation is real estate and real estate banking. The Realty Associates buys, sells, loans, finances and rents all kinds of real estate properties. For the past 15 years I have kept myself informed and know market values of land in Brooklyn. In Brooklyn and vicinity, starting at the Atlantic Ocean in the Borough of Queens, I have bought, developed and sold a tract which is about 2,200 or 2,300 feet front on the Atlantic Ocean running from the Ocean to the Bay. I have leased personally and developed Rockaway Point, which has about 4 or 5 miles of waterfront on the Bay. I have bought and sold property on Jamaica Bay known as Plum Island and the property in the rear fronting on Broad Creek. I purchased 320 acres known as Gerrittsen Beach fronting on Gerrittsen Beach, Broad Creek and Shellbank Creek. I bought property formerly owned by the Brighton Beach Racing Association, which included the old race track, and the property in the front, fronting on the Ocean, and developed that, building a new bath house; afterwards developed the rear, building

some 300 houses there, filling it in, putting in water and gas, and afterwards sold it. I sold property on Gravesend Bay belonging to Judge Ferguson. I bought property known as Tebo Basin, which is at the foot of 22nd and 23rd Streets, South Brooklyn, and afterwards sold it to the Todd Shipyards Corporation. I bought property at Coney Island formerly owned by the Dreamland Corporation and still own it. I leased property at Coney Island on Surf Avenue corner of Woolsey's Walk. I bought property in Surf Avenue known as the Ben Hur Ride. I recently bought the [fol. 462] Brighton Beach Hotel property at the foot of Ocean Avenue, at the foot of Coney Island Avenue, fronting on the Atlantic Ocean, from the Receiver of the B. R. T.

When I say I have bought and I own I refer both to personal operations and the operations of the companies with which I am associated. I will distinguish if desired.

For the Realty Associates I have bought and sold property on Coney Island Creek to the American Ice Company and the Horton Ice Cream Company. I appraised the estate of the late Anthony N. Brady, which took in property on Gravesend Bay. I purchased and sold for the Realty Associates property on Gravesend Bay at the foot of Bay 11th Street. I purchased 23 acres on Staten Island fronting on the Kill Von Kull from a man named Drake for the Metropolitan Bi-Products Company. I negotiated the purchase for the Metropolitan Bi-Products Company of 60 acres on Fresh Kills, Staten Island. I appraised for the United States Government property at Second Avenue and 57th and 58th Streets. I have advised and appraised various properties and buildings of the Bush Terminal Company and testified in an arbitration in the purchase of 210 lots on Third Avenue from 29th to 32nd Street, between the Bush Terminal Company and the United States Navy Department. I sold to the Shipley Construction & Supply Company 25 lots fronting on Second Avenue at 41st and 42nd Streets, South Brooklyn. I acted as arbitrator representing the owner for property in Bayonne next to the plant of the Standard Oil Company, the tenant being the Lehigh Valley Railroad, and afterwards sold this property to the Standard Oil Company of New Jersey. I appraised industrial property on Third Avenue and 26th Street for the Alart & McGuire Company. I appraised and participated

in a syndicate making a loan to the First Construction Company of property taken afterwards by the State for barge canal terminal in the Red Hook section of Brooklyn. I have [fol. 463] leased property for the Beard Estate to the Robins Dry Dock & Repair Company. I appraised the industrial property of the National Aniline & Chemical Works, various properties in the Borough of Brooklyn. I appraised the properties of the Otto Huber Estate in various sections of Brooklyn. As an officer of the Realty Associates I bought and sold a 7 story reinforced concrete factory building at the corner of South Fifth Street and Berry Street. I made loans as an officer of the Prudence Company on buildings in Long Island City to the Repetti Candy Company, Tiffin Products Company, Gehnrick Indirect Heat Oven Company, Hellman Motor Corporation and L. Blau & Sons. Under my direction I have built in the past 5 years a number of industrial buildings and have made loans as an officer of the Prudence Company of twenty millions of dollars in the past two years. As a member of the Executive Committee (Objection by defendant overruled; exception) we appraised an average of 10 properties a week and besides the amount of loans that we would offer to make on those various properties. As a member of the Buying and Selling Committee of the Realty Associates we would look at several hundred offerings a year of properties for sale and in addition to that the prices at which we sell any real estate owned by the company, or pass upon any loans or application on real estate propositions that might come in to us.

By the Master:

The Prudence Company is a subsidiary of Realty Associates, that makes first mortgage loans and then sells bonds secured by these first mortgage loans or sells certificates deposited with the trust company to the public, known as Prudence Bonds. It is a new company about 3 years old doing about $10,000,000 a year in sales. We [fol. 464] have acceptances, by which I mean loans, that we have agreed to make and which are in process, as we do not consider a loan until the building is finished, averaging around ten or twelve million dollars. Thirty percent

of the properties on which these loans are made are in the Borough of Brooklyn.

By Mr. J. A. Dykman:

I forgot to mention that I made a loan—I have gone all the way around the harbor and taken in the Atlantic Ocean on the Queensborough side, on the Brooklyn side, and I have come around into Coney Island Creek, into Gravesend Bay, and I have come around down into New York harbor, New York Bay, at the Tebo Basin, and I have come up and come into the Erie Basin and gone around and also made—I have come into Gowanus Canal and gone around into—I forgot to mention that we made a loan. The piece on Gowanus Canal which I mention is the Tebo piece right at the mouth of the harbor entering in the Canal. I don't know whether it is what they call the canal right there or not. On Newtown Creek we have just made an appraisal and a loan, the record of which I have not got here. I have recently made valuations of property in Brooklyn for the plaintiff in which connection I was furnished a map—referring to Plaintiff's Exhibit 145—and going through the sheets I visited and inspected property shown on Sheet 1 known as the Nassau Works and have formed an opinion of its market value as of June 1, 1923 unimproved.

Cross-examination on qualification of the witness as an expert.

By Mr. Cummings:

The properties nearest to the plaintiff's properties on Gowanus Canal, which I have either bought or sold, are the Beard at Erie Basin, the Barge Canal Terminal, the [fol. 465] Tebo Basin piece and the Bush property. The Erie Basin is not on the Canal, it is on a basin.

The next parcel is the Tebo Basin piece, which I bought and sold for the Realty Associates about 1916, maybe 1914, between 1914 and 1916. It consisted of 2 docks or piers and some upland, partly fronting on Third Avenue and fronting on 22nd and 23rd Streets. My company bought it between 1914 and 1916 and sold it in 1917. As to the

Erie Basin property I acted as broker in the lease from the trustees of the Beard Estate to the Todd Shipyards for 10 years in 1919. I represented the syndicate that made a $1,400,000 loan on that piece, which was owned by the First Construction Company and is now owned by the State of New York, having been appropriated. It runs south on Columbia Street quite a large tract there. I don't remember just the size but I remember the loan was $1,400,000. It is right on the waterfront on Gowanus Bay. My company participated in the syndicate comprising a group of banks and took a percentage of the loan with the rest of them, in 1914 and not paid until the award from the State and I think out of it. I also appraised for the Prudence Company its property in Hamilton Avenue right on the Canal and the McQuade property at Hamilton Avenue and Propect Avenue fronting on Gowanus Canal. The First Construction Company piece was an abandoned piece of waterfront property at the time we made the loan bordering on some basin that had not been in use for a long period and with no structures on it. The McQuade property was an application for loan we just considered six months ago and that property has been sold in the last 7 or 8 years, leased and sold several times. We had an application for a loan and we went all over it and we did not get together with the people. I negotiated the transaction and handled the transaction for [fol. 466] all the banks and bought and sold this piece. I have bought and sold no other pieces along the Gowanus Canal. I have actually bought and sold one parcel, but passed upon a loan for the parcel owned by the First Construction Company and leased another and passed upon the McQuade loan but did not make it. I do not know what the reasons were that we did not get that loan. In addition to passing on property I have been all over the Bush property and the Kings County Lighting Company property along Gowanus Bay and New York Bay not very much to the south of this property. By going over all this property I mean I have appraised most of the waterfront or been consulted in reference to the sale or purchase of it, including the Bush properties, the Kings County Lighting Company property and the Brooklyn City Railroad

Company property. I made an appraisal of the property for the syndicate loaning to the First Construction Company and it was on my recommendation that the loan was made. I did not testify before the referee as to the value of that property at the time of the appropriation by the State. Nobody else made a valuation or an appraisal of the First Construction Company property at that time for the purpose of that loan, which was made solely upon my appraisal. Those are the only three parcels on Gowanus Bay or Gowanus Canal, adjacent or in the immediate vicinity of the gas plants, that I have had anything to do with. I have gone over all the properties and looked at the sales in order to prepare myself to testify here but personally have not had anything to do with those transactions except what I have testified.

By Mr. J. A. Dykman:

I have appraised the properties shown on Sheet No. 1, 2, 3, 4, 12, 16, 17, 18, 19, 20, 21 and 22 of Plaintiff's Exhibit No. [fol. 467] 145. I have visited and inspected each one of the parcels shown on the sheets I have named and formed an opinion of the market value of the property shown on those sheets as of June 1, 1923.

By Mr. Cummings:

I have bought or sold no parcels in the immediate vicinity of the Nassau Works on Wallabout Channel. Adjacent to the Williamsburg Works, shown on Plates 2 and 3 of Exhibit 145, I sold at the foot of Oak Street approximately 15 years ago. We made a loan on Newtown Creek and Kingsland Avenue, 595 feet on the Creek, recently. I have neither bought nor sold land within recent years on Wallabout Channel adjacent to the Nassau Works or on the East River adjacent to the Williamsburg Works or adjacent to the Equity Works in Newtown Creek. I pass upon loans generally for Realty Associates. Where they loan money on bond and mortgage I go out and look at the buildings and pass on the loans. I have sold Prudence Bonds to the extent of approximately ten million dollars this past year. We loan money upon property and then deposit mortgages with a depositary and issue our personal bonds. The depositary holds

these mortgages as security for our bonds. We issue bonds to the amount of 100% of the mortgages that are deposited or we sell a certificate which is a part of the particular mortgage, complying with the law for trustees. The mortgages average 60% of the value of the securties. It is not our general practice to loan only 60% of the appraised value. We loan upon our own judgment. For instance, if we had the Standard Oil Company on a bond we would go higher. It depends upon the bond and upon the kind of security we have and whether we believe in it and whether we thought the neighborhood was going to change, something like that.

[fol. 468] We have an Appraisal Department with the Realty Associates with four employees, some of whom get up the detail. Mr. Fox, one of the other Vice-Presidents, is really the head of that Department at the present time, whose subordinates get out the sales and data, figuring the area and submitting the data on a sheet to the Executive Committee which passes on each particular loan. When it comes before the Executive Committee, the detail pertaining to the sales of adjoining property of like character, the cubical contents and character of the building taken from the plans, and a physical inspection, if it is a building loan, comes before the Executive Committee. Most all our business is building loans. In some, but not all cases, the members of the Appraisal Department go up on the property. It is passed upon by the Committee and in 98% of all the loans we make and all the purchases and sales, I personally see the properties and the plans. In all cases I go myself to view the property and not less than three members of the Executive Committee also view it, acting as appraisers as well as me. The members of the Appraisal Committee make recommendations, figuring cost and the value of the land after viewing it if the building is up. The plans of the building are most important.

I have been in the Realty Associates twenty-one years, from an office boy up and have had construction experience, keeping time on a job, I suppose about sixteen years ago. I have been on all our jobs, naturally. Our construction work is not largely residential. We have built concrete buildings, etc.

[fol. 469] The property of the First Construction Company was taken by the State about 1914, maybe 1912, at

which time the property was in the Beard Estate. I do not remember the details of a contract outstanding for its purchase by Charles B. Houston. There might have been conveyances or contracts made with so-called dummies whose names I do not remember. Counsel's statement that it was a loan by a syndicate composed of the Title Guarantee & Trust Company which loaned $900,000 and the Brooklyn Trust Company and one or two others, including Realty Associates who took the note of the First Construction Company and as collateral security for that note an assignment of the award to be made at some future time by the State of New York and also an assignment of award to be made by the City of New York, and the stock of the First Construction Company, and were made directors of the First Construction Company, taking over absolute control of the corporation, lacks an explanation of the purpose and reason, but leaving the purpose out, the facts as stated are substantially correct. The security was the real estate because there could not be any mortgage, title being vested in the State and the security was the judgment as to what the real estate was worth to anybody, based upon the value of the property.

Objection to the witness's qualification.

By Mr. J. A. Dykman:

I have kept a record of the sales of other similar property in the vicinity of that to which I have been asked to testify and have kept myself informed of such sales.

Objection to witness's qualification overruled.

[fol. 470] My opinion of the market value of the various parcels of property shown on Plaintiff's Exhibit 145 which I have appraised, is a follows:

Sheet No. 1, Block 2161, Lot 20, $617,900 as of June 1, 1923, unimproved;

Sheet No. 2, the Williamsburg Works, Lots 1 and 75, Block 2287, Section 8, $542,000;

Sheet No. 3, Block 2288, Lot 1, which is the Williamsburg Works across the street from the other property, $46,400;

Sheet No. 4, the property bounded by North Twelfth Street, Berry Street, North Thirteenth Street and Wythe Avenue, Block 2283, Lot 1, $72,900;

Sheet No. 12 is an office and show room of the Metropolitan Branch, being Block 999, Lots 1 and 72, $34,800;

Block 419 is the Fulton Works and Third Avenue Garage, consisting of Lots, 1, 7, 8, 15, 16, 17, 18, 19, 20, 23, 24, 28, 29, 30 and 32; Block 426, Lots 1, 26 and 31. Taking Block 419 first, the valuation is $73,300, bounded by Douglas Street on the north, Degraw Street on the south, Third Avenue on the east and Nevins Street on the west. In Block 426 we took Lots 1, 26 and 31, bounded generally by the south side of Degraw Street taking in the whole block from Nevins Street to Third Avenue; the northeasterly corner of Nevins & Sackett Streets running 220 feet on the north side of Sackett and omitting the corner at Sackett & Third Street, $57,500.

[fol. 471] Block 425, lying between Nevins Street and Gowanus Canal, Lot No. 1, $51,750, making the total Sheet No. 16 $208,400.

The Third Avenue Station, Block 420, Lot 1, Sheet 17, being 200 feet on Douglas Street, 198' 6" on Third Avenue and 200 feet on Degraw Street, valuation $46,400.

Sheet No. 18, Metropolitan Works Meter Repair Shop, 12th Street Station, covered by a deed from the Metropolitan Gas Company to the Brooklyn Union Gas Company, Plaintiff's Exhibit 19, is Block 1025, Lots 16, 33, 34, 37, 38, 40, 41 and 45, $90,800.

Sheet No. 19, Block 1007, Lot 172, between Gowanus Canal, 11th Street, Second Avenue and 12th Street, $209,900.

Sheet No. 20, the Citizens' Works and Fifth Street Station, bounded by the Gowanus Canal, Huntington Street, Smith Street, Fifth and Hoyt Streets, the first parcel known as the Citizens' Works, Block 471 and part in Block 475, Lot 1 in Block 471 and Lot 65 in Block 471, Lot 1 in Block 475 and Lot 1 in Block 469, $485,500.

Sheet No. 21, the Fifth Street Station, bounded by Fourth, Hoyt and Fifth Streets, which is also part of the Citizens property, being Lots 25 to 35, 37, 39 and 41 to 49, running 200' 9" on Hoyt Street and 219' 6" on Fifth Street, $25,000.

Sheet No. 22, the premises known as 176 & 180 Remsen Street, Block 255, Lots 36 and 40, $335,600, making a total of $2,731,900.

In my testimony with reference to Sheet 16, the Fulton Works, Third Avenue Garage, being the block bounded by [fol. 472] Nevins Street, Third Avenue, Douglas Street and Degraw Street, Block 419, I omitted a parcel 100 feet on Third Avenue; 130' 4" on Degraw Street, I value at $16,300 which is in addition to the sum of $73,300, making the total for Sheet 16, $224,700, or one parcel at $16,300, one at $73,300, one at $57,500 and one at $77,600.

Cross-examination by Mr. Cummings:

I first went upon the property shown on Sheet 1 for the purpose of making an appraisal for the plaintiff, about 1918 and 1919, and made an appraisal in connection with some case. Just what it was I do not know. I did not appear as a witness on values in the prior case, but submitted some valuations to the plaintiff in 1919 or 1918. I again went upon the property for the purpose of making an appraisal sometime last spring. This applies to all of the properties I have appraised. My investigations of the properties have taken at least three weeks of my time and about a month of two subordinates and some time of the other officers in the Realty Associates, in discussions. I did not go upon all the properties owned by the plaintiff and have not at any time made a valuation of all of them. I value all that they submitted to me. I do not know what they own. They have submitted to me more than I have testified regarding today. I would not say I have appraised all the property owned by the plaintiff upon which their plants are situated. I have appraised all they gave me. I don't know, they might have something else that I don't know anything about, but I have appraised more property than I am testifying about today.

[fol. 473] I made an appraisal of additional properties to those I have testified to here this morning in 1918 and 1919 and last spring. The additional properties concerning which I have not been questioned today are Hudson Avenue, Marshall Street, John Street and Little Street, Block 13 and Lot 2; Hudson Avenue, Marshall Street and East River, Block 6, Lot 1; Atlantic Avenue, Block 285, Lot 14;

St. James Place, Block 1980, Lot 16; York Street, running through to Front Street, Block 55, Lot 15; Gold Street, Plymouth Street and Water Street, Block 33, Lot 1; Fulton Street, Block 2015, Lots 27 and 29; Bedford Avenue corner of South Second Street, Block 2405, Lot 28; Kent Avenue, Wallabout Street and Rutledge Street, Block 2223, Lot 1; Keap Street, Block 2197, Lot 18; Belmont Avenue, Williams and Alabama Avenues, Block 3751, Lot 6; Atlantic Avenue, Ashford and Cleveland Streets, Block 3968, Lot 5; Bogart, Meserole and Scholes Streets, Block 3048, Lot 1; Skillman Street, Block 1886, Lots 10 and 19; Maspeth Avenue, Block 2897, Lot 13; Bergen Street, Block 2888, Lot 33; Porter Street, Block 2898, Lot 1; Maspeth Avenue, Block 2927, Lot 44. I might have done something else for them but that is all the record I have here.

This spring I valued all these properties as of January 1, 1923 and am not testifying today in reference to the value of these parcels I have just enumerated. I reached my valuation as to property on Sheet 1 known as the Nassau Works on the Wallabout Channel, on the basis of adjoining sales and my general experience and judgment. I have not conducted any sales or participated in any sales in this immediate neighborhood. My valuation per square foot is $3.50 which I apply to the whole tract, giving no greater value to the land lying along the Channel than to the property along Kent Avenue. Speaking of waterfront property generally, shown on Sheets 2, 16, 18, 19 and 20, there has been very little activity as long as I can remember in waterfront properties which have remained in the owner, being [fol. 474] all purchased for a permanent use by corporations and one thing and another that occupy them but go on and locate their plant there and it goes on forever. I mean they are not for sale. These properties rented for more during the war than today. There were a few waterfront sales during the war when there was greater activity along the waterfront and greater demand for waterfront property than there is at the present time. During the war, prices were abnormally higher, which demand began to decrease after the Armistice, and that, of course, no prudent appraiser would take as value. There was not a waiting list during the war, but a good demand when you could rent anything you had. Today rentals are not easy to obtain de-

pending on the location and where adequately improved, pretty difficult today, meaning by "adequately improved," buildings and facilities such as railroad, float bridges or if you are talking of buildings, up-to-date buildings that give service. The largest waterfront development and most up-to-date is the Bush Terminal where there are five million square feet of rental area and nothing to rent. This is no recent construction. Bush started twenty odd years ago and has not been adding during the past ten or fifteen years. There is not any difference in my judgment in real values between today and last spring and discounting any war demands, a valuation upon the property today would be my opinion of a fair valuation as of last year. When I went upon the properties to make these appraisals, I had maps similar to Plaintiff's Exhibit 145. I advised myself concerning sales of property adjoining that shown on Sheet 1, from a plant or what we call a plant, where we keep a record of sales, mortgages and other real estate data. Where we see a sale that is comparable to the parcel that is to be considered, we usually take it up. When I look at conveyances affecting property, I find stamps and in most of the cases the stamps are right. Sometimes they put too many on; [fol. 475] sometimes they put too few on, depending upon what the object is. We do not investigate to find whether they put too many on or failed to put enough on. If a sale would help us in any way or if there was a sale that would throw some light upon the parcel under consideration, we check that sale, in all probability knowing the broker or knowing one side or the other to the transaction and getting the information from them. All the small transactions, I suppose, are very nearly 100 per cent. right as far as the stamps go and are correct. If we get into the bigger transactions they sometimes put to many on, but I do not think they ever put too few on. I would not say the actual consideration is more apt to be over-stated than under-stated. I would say that would be in a very small percentage of cases where anybody put the wrong amount of stamps on. In addition to our own plant, the plant of the Title Guarantee & Trust Company is at our disposal. There is no stock control between the companies or anything like that. We pay them and have paid them up to now an annual retainer for services and the use of the plant and one thing and

another. In preparing myself to testify as to the value of this property, I consulted our own plant and also their plant and the record in the Register's office, which I had one of my subordinates do. He ran it back to see whether there were any mortgages and if it was a parcel in the neighborhood and was comparable, being another waterfront piece, we would go and get the data direct from the seller, buyer or broker. I did not rely on him to furnish me with the extent of the liens upon the property. Referring to this particular Cross Street piece of property, there are few sales that have any bearing as to its value. There are sales on both sides of it, adjoining it, and those two sales, naturally, or those three or four sales right adjoining the property, in my judgment would be the best sales to compare this [fol. 476] property to, and those sales which checked up or any others that would have any bearing here. Our plant and the plant of the Title Guarantee & Trust Company and other investigations resulted in finding three or four sales which I thought comparable to this property. One South fronting on Cross Street, D. L. & W. freight station purchased in two parcels: First, A begins at the corner of Washington Avenue and Wallabout Canal, fronting 330 feet on Washington Avenue and 262 feet on Wallabout Canal.

[fol. 477] William R. Burling, being sworn, testified as follows:

I have resided at 62 Phelps Road, Ridgewood, New Jersey, about four months, prior to which I lived in Brooklyn since my birth about thirty-five years ago. I have been in the real estate business a little over thirteen years in the Borough of Brooklyn with the exception of such time during the war as I served as the senior real estate examiner for the United States Shipping Board—Emergency Fleet Corporation. I became a vice-president of the Realty Associates today prior to which I have been in business for myself or vice-president of the Brokerage Corporation. I am a member of the Brooklyn Real Estate Board and was president of it from 1920 to 1921. For ten years I have kept myself informed and known of the market value of land in Brooklyn and have had quite a broad experience

with industrial property of which I have made valuations for court proceedings, private corporations, mortgage purposes and all of the usual purposes for which appraisements are had.

My experience embraces the Borough of Queens as well as the Borough of Brooklyn. I have assembled a great many plots of industrial property including the site for the Sperry Gyroscope Company on the Manhattan Bridge Plaza in Brooklyn. I have sold along the Flatbush Avenue Extension between the Bridge and Flatbush and Fulton at least six or seven plots, a six story and basement modern loft building, 718-728 Atlantic Avenue, 61-67 Navy Street a three story heavy construction factory building, properties under the various buildings of the Gair Company and [fol. 478] assembled the site for the Strand Theatre at Fulton Street and Rockwell Place, the site for the R. H. Comey Company on 19th Street through to 18th Street in south Brooklyn and a number of other similar transactions of like nature.

As senior appraiser with the Shipping Board in the early days I was concerned with the acquisition of property for the various housing sites throughout the Atlantic and Pacific seaboards and later personally placed the rentals on the majority of the Shipping Board Villages, such for instance, as the largest of all, Fairview Villages, recently sold by Joseph P. Day at auction.

I have recently valued some properties for the plaintiff as an aid to which I was furnished certain maps. On Plaintiff's Exhibit 145 I was furnished with Sheets 5, 6, 7, 8, 9, 10, 11, 13, 14, 15, 23, 24 and 25 and visited and inspected the properties or parcels shown on each of the sheets. I have formed an opinion as to the market value of the properties shown on those sheets as of June 1, 1923 unimproved.

Sheet 5 is the parcel fronting on Hayward and Wallabout Streets, Kent Avenue and Rutledge Street, known as the Ruthledge Street Station. In my opinion the market value of that property as of June 1, 1923 unimproved, was $67,500.

Sheet 6 is the parcel on the south side of Keap Street 80 feet west of Wythe Avenue, 145 ft. 7 in. on Keap Street,

153 ft. on the easterly line, 153 ft. 8 in. on the westerly line and 137 ft. 6 in. on the rear line, known as the Keap Street Station, the market value of which in my opinion as of June 1, 1923 unimproved was $31,000.

[fol. 479] Property shown on Sheet 7, Union Station, $60,500.

Sheet 8—$30,500.
Sheet 9—$34,650.
Sheet 10—$45,400.
Sheet 11—$27,700.
Sheet 13—$33,850.
Sheet 14—two parcels at $5,000 each.
Sheet 15—$15,500.
Sheet 23—$5,700.
Sheet 24—$174,100.
Sheet 25—$183,300.

Making the total valuation of all the properties which I have appraised $719,700.

[fol. 480] CHARLES C. ATWOOD

Direct:

I am Assistant Chief Engineer of the Brooklyn Union Gas Company and its subsidiaries. I graduated from Cornell University in 1901 with a degree of Mechanical Engineer. Soon after graduation I was employed by the New Amsterdam Gas Company in the construction work at the Ravenswood Plant. At that time the plant was being enlarged from a capacity of about 15,000,000 cubic feet a day to a capacity of about 30,000,000 a day, and I assisted in the construction at that time. On completion of the plant, I was made superintendent's assistant in the operating department, and, as such, had charge, actual charge of the manufacture of gas in the generator house. I did all the photometry work that was done in the daytime, also had charge of the chemical work that was done.

The gas manufactured at Ravenswood was water gas, carburetted water gas. I was later transferred to the 44th Street Station of the Consolidated Gas Company as assistant superintendent, and as assistant superintendent of that station, which was a water gas works, manufacturing

about 10,000,000 cubic feet a day, I had charge of the manufacture, the repairs et cetera, under the superintendent. I was there for about two years, and then was transferred again to Ravenswood as assistant superintendent. There I had charge of the manufacture and the repairs in general, under the superintendent, and I held that position for nearly four years, and then I became superintendent. [fol. 481] As superintendent I had charge of the Ravenswood plant, manufacturing water gas, also charge of the holder stations in New York owned by the New Amsterdam Company at 58th Street on the West Side, and at 42nd Street on the East Side. The plant at that time had a capacity of about 30,000,000 feet a day. In 1917 I became assistant gas engineer of the Bartlett Hayward Company of Baltimore, and as such assisted in the design and construction and later in the operation of the Toluol plants which were put up by the Bartlett Hayward Company for the United States Government. Five of these plants were located on the properties of the Brooklyn Union Gas Company, at the plant of the Brooklyn Union Gas Company, and several outside of the City of New York. In 1918, the latter part of 1918, I became connected with the Brooklyn Union Gas Company in the position I now hold, namely, Assistant Chief Engineer. As Assistant Chief Engineer, all of the engineering reports go through my office before presentation to Mr. Jourdan, who is president and chief engineer, and I am in daily consultation with the heads of the various engineering departments. All the authority for money expenditures go through my hands. I am consulted in regard to the distribution work, as well as actual manufacture. That includes supervision of manufacture. The position which I hold and the discharge of those duties takes me to the various plants and other properties of the company, very often.

[fol. 482] I am a member of the American Gas Association, the Society of Gas Lighting, and the Illuminating Engineering Society. I am also a licensed engineer for the State of New York. I am familiar with the buildings, plants and structures of the plaintiff company, having seen them and visited them very often ever since 1917, at the time the toluol plants were laid out and constructed.

Plaintiff's Exhibit 146 for identification, consisting of 22 blueprints marked consecutively, was prepared in my

office and under my supervision. This exhibit was prepared from records of the company, maps and drawings, and I had them gathered together. I took maps in the possession of the company. I had those maps assembled in the form they are here, without dimensions of any buildings, without any scale. They show the location of each building and some of the apparatus. I checked the location of each building and the piece of apparatus shown on this map in its relation to the other apparatus and buildings shown on the map, personally, by inspection of the properties themselves, and in comparison with the maps of those properties. I think they were ready then. I had new sheets prepared from the old maps and then went out myself and personally checked their accuracy.

Starting with Sheet No. 1 of Exhibit 146 for identification—This map shows the Metropolitan plant as well as the meter repair department building and the 12th Street holder station. On the Gowanus Canal; at 11th Street is [fol. 483] located the ash pocket, and traveling in an easterly direction, the buildings and their use are about as follows: Next is the pump house in which are the pumps that handle the oil, water, and tar. Further east is the generator house in which are the water gas machines together with their accessory equipment and blowers and blast piping and steam piping and oil piping. Further east is the boiler house in which is located the boilers, together with their pumps, steam lines, water lines, etc. Still further east is the machine shop in which the machine work at the plant is done and contains the various machine tools, etc. Still further east are two purifying houses in which are the purifying boxes; and still further east the oil storage and tar storage tanks. Starting again at the Canal and following along the north side of 12th Street is the coal hoist, the coal sheds and coal-handling apparatus. Between this point and the pump house and ash pocket described above are tar tanks, and a small building used for storage. Easterly from the coal shed is the exhauster house and electric station. In the exhauster house are located the exhausters which handle the gas about the plant. East of the exhaust house are the tar extractors and salt water condensers, salt water and fresh water condensers. There are five salt water condensers and one fresh water condenser. Still

further east are five shaving scrubbers. Further east is the meter room in which are located the station meters, and the office building. Further east is the relief holder of 320,000 cubic feet capacity. I neglected to say that between [fol. 484] the condensers and the boiler house is located another relief holder of 105,000 cubic feet capacity. Further east again are located the carpenter shop and the small building used as a lunch room and a locker room; a storage holder of 370,000 cubic feet capacity. Still further east is another storage holder of 575,000 cubic feet capacity. On the corner of 12th Street and Second Avenue is located one of the buildings of the Meter Repair Department where repairs to the consumers' meters are made, also the office of the superintendent of the Meter Repair Department. South of 12th Street is marked on the map "coal storage," an additional storage for the Metropolitan Works, and further east is a 5,000,000 cubic foot holder—that is a holder of 5,000,000 cubic feet capacity, together with its valve-houses. Still further east is the Meter Repair Shop, in which the consumers' meters are repaired. Still further east is the 12th Street pumping station in which are located the high pressure exhausters which take the gas from the holders and deliver it to the transmission system. Further east are lots marked on this map, Nos. 40, 41 and 45, which are used for storage purposes. The total manufacturing capacity of that plant as of June 1, 1923 was 24,000,000 cubic feet per day. The coal storage was 24,000 tons, and the oil storage, the sum of all the oil tanks shown on this map was 894,421 gallons. The total holder capacity is 5,595,000 storage holder capacity. That map shows the structures as of June 1, 1923 and that is true of all the [fol. 485] sheets in that exhibit. In the generator house we have added three waste heat boilers. Their capacity is 335 horsepower each. We have changed the size of the blowers that we used on June 1st to a large sized blower. We have installed two station meters in the meter room. That covers the major changes that have been made at that plant and brings the present capacity up to 27,200,000 feet per day. The coal storage and oil storage are the same as they were on June 1st.

Sheet No. 2 shows the Williamsburg Works and the structures on it, the major structures of which are as follows:

Starting at the corner of North 12th Street and the East River there are located an oil tank, coal-hoisting apparatus and coal sheds, with its conveyors, coal bins, et cetera, in the shed. Still farther east is the generator house, together with the blowers, steam piping, blast piping, oil piping and various accessories. Farther east is a store room, stock room, pump rooms. Still farther east are five salt water condensors. Farther east are the purifying houses, in which are located the purifying boxes. Still farther east is the relief holder of 315,000 cubic feet capacity. Still farther east is the office and meter house, which is on the corner of Kent Avenue and North 12th street. Starting again at the river on the south side of the plant, we have the oil tanks, the tar tanks, salt water pump house, in which are located the several pumps; farther east is another pump house, in which are located the pumps for the tar and oil. Then comes the separating system, where the tar is separated from the water. The sump shown near the letter "U" on the map is a pit where the water enters from the river for the salt water [fol. 486] pump. The water comes in from the river and the salt water pumps take their suction from that sump. East of the tar separating system is the carpenter shop, machine shop and paint shop; and still farther east is the blacksmith shop and the accommodation room for the men. Still farther east are the eight shaving scrubbers. Then come the purifying houses, then the holder marked No. 1, which is used now simply as a setting tank. On the corner of Kent avenue and North 11th street is Holder No. 2, having a capacity of 460,000 cubic feet. On the east side of Kent Avenue there is located another storage holder of 1,100,000 also oil storage tanks and tar tanks. The total capacity of that plant as of June 1st, 1923, was 30,000,000 cubic feet per day. The coal storage capacity was 18,000, tons the oil storage capacity was 1,456,000 gallons. The total storage holder capacity is 1,560,000 cubic feet. With reference to the previous works, there have been very few extensive additions or withdrawals since June 1st, 1923 on this plant. Some changes have been made in the generator house, but not very extensive. The capacity is the same today as it was on June 1st, 1923.

Returning for a moment to your Sheet 1 shows the Metropolitan Works where oil is delivered from barges in the Gowanus Canal to the pipe line and through that pipe line

to the oil storage tanks. The coal is delivered from Gowanus Canal by barge, taken from the barge by coal hoist, shown on the print and stored either in the coal shed or in the coal storage south of 12th street.

[fol. 487] Sheet 2 shows the Williamsburg Works; oil is delivered at the Williamsburg Works either by barge from the East River or by pipe line from the Standard Oil Company's plant north of 12th Street. During the last year, it has been very seldom by that method and nearly entirely by barge. I think up to about a year and a half ago about half of it came by barge and half by line. Now nearly all of it comes by barge. Immediately adjoining, on the other side of North 12th street the Standard Oil Company has a plant. The coal is delivered by barge from the East River and unloaded from the barge by the coal handling apparatus and delivered to the storage sheds.

Sheet 3 shows the Nassau Works and starting on the Wallabout Channel at the northerly property line, is located the ash hoist and ash pocket, and going in an easterly direction the oil tanks and still farther east the purifying house. South of the oil tanks are located the various tar tanks, tar separating system and pump houses, also one of the generator houses in which there are four Williamson Generators, together with their accessories of all kinds, gas piping and oil piping, steam piping and blowers. Going farther east is the boiler room in which are located some of the boilers of the plant. Still farther east is the engine room, exhauster house used for the high pressure exhausters which deliver the gas from the plant to the high pressure transmission system. South of these buildings are located other oil tanks and two relief holders, one of 107,000 cubic feet capacity and one of 255,000 cubic feet capacity. Sout- of the generator house mentioned before is another gen- [fol. 488] erator house in which are located three water gas machines. Farther south is an engine room in which are located the exhausters which handle the gas through the plant. Still farther south is another generator house in which are located three boilers and two water gas machines. South of the relief holders are located the purifying houses. Still farther south the shaving scrubbers, still farther south the salt water condensers, storerooms, machine shops, carpenter shop, and still farther south the coal storage bin. On

the corner of Cross Street and Wallabout Channel, extending two thirds the length of the waterfront property, is located a coal pocket, coal storage bin. On the corner of Cross Street and Kent Avenue is located the office, station meter room, oil storage, and farther north along Kent Avenue are located five outside purifiers. The daily manufacturing capacity of that plant as of June 1, 1923 was 21,000,000 cubic feet. It- coal storage was 9,300 tons and its oil storage capacity was 765,230 gallons. Since June 1st, 1923, we have made extensive additions to the coal pocket on the channel. With coal handling apparatus, the connections on the four generator sets in the generator house marked "I" have been increased in size. The purifiers in house marked "C" have been increased in size, and the capacity of the plant has been increased to 24,500,000 cubic feet per day. That is the gas manufacturing capacity. The coal storage capacity has been increased to 19,000 tons, and the oil storage stays at it was as of June 1st, 1923. Oil is delivered by barge to the mouth of our pipe lines at the dock and pumped from there to the oil storage tanks. Coal is received in [fol. 489] barges in the Wallabout Channel and discharged into the coal pocket or directly to the bins in the generator houses.

Sheet 4 shows the Fulton Works and the Third Avenue Holder Station. Starting at the Gowanus Canal and Degraw Street we have the tar separating system and tar tanks, coal storage bins and elevated coal storage bin, and the generator house in which are six water gas machines, together with their accessories, steam piping, oil piping, air piping, and so forth. Those are Williamson Machines. Still further south is the oil separating tanks, the condenser house in, which are located the condensers. Farther east, the exhauster house and blower room in which are located the exhausters which handle the gas through the plant, with their various accessories. Still farther south is the boiler house and the coal storage bin together with its coal handling apparatus. Farther south is an accommodation room for the men and an ash bin. East of Nevins Street, at the corner of Degraw, is located the office building and meter house in which are located the station meters. South of this building is one of the purifying houses. Farther south, the oxide room, where the oxide is spread

and handled. Still farther south, another purifying house. East of the office building are located two storage holders, one of 252,000 cubic feet capacity and one of 284,000 cubic feet capacity. There is also a governor house where the pressure of gas leaving the works is controlled. South of these holders is a round purifier, four shaving scrubbers [fol. 490] and two tar extractors, also a small pump house. At the corner of Douglas Street and Nevins is loated a wooden—shown on this may as a stable—a wooden building which is now used as a store house. Farther east is a galvanized iron building used as a storehouse, and farther east is a blacksmith shop. In the centre of the block are located the tar tanks, in a concrete inclosure. Farther south is a storage shed, and on the corner of Degraw Street and Nevins Street, the blacksmith shop, carpenter shop and paint shop, with a pipe rack a little farther east. A relief holder of 100,000 cubic feet capacity is located east of these buildings. Still farther east are the oil tanks, and still farther east another oil tank. On the corner of Degraw Street and Third Avenue is located one of the garages, where repairs to automobiles are made and supplies of all kinds are kept. Just north of this is a garage marked "Z". That wall there near the letter "Z" is simply a partition wall, and the building extends to the centre of the block. At the corner of Third Avenue and Douglas Street is located the Third Avenue Pumping Station in which are the exhausters for handling gas, from the holders to the high pressure system. In the centre of this block is a storage holder of 985,000 cubic feet capacity. At the corner of Degraw Street and Third Avenue is located a boiler house, an exhauster house and a small pump house. From No. 2 Coal Shed to No. 3 Coal Shed is an overhead coal trestle by which coal can be taken from Coal Shed 3 to the generator house or boiler house as desired.

[fol. 491] As of June 1, 1923 the total manufacturing capacity of the Fulton Works as of June 1, 1923 was 13,000,000 cubic feet per day. The coal storage capacity is 6,000 tons. The oil storage capacity is 1,015,248 gallons. The storage holder capacity of the Fulton works is 536,000 cubic feet, and of the Third Avenue holder stations 985,000

cubic feet capacity. There have been no major additions or withdrawals since June 1, 1923. The manufacturing capacity, the coal storage capacity and the oil storage capacity is the same. Coal and oil are both delivered by barge from the Gowanus Canal. The oil by the discharge from the barge by pipe line to the oil storage tanks and the coal is delivered from the barge by means of coal hoists to the coal sheds or to the overhead bin in the generator house.

Sheet No. 5 shows the Citizens Works and the 5th Street Pumping Station, located on the corner of 5th Street and Smith Street, there is one of the storage holders, having a capacity of 493,000 cubic feet. Further east is another storage holder having a capacity of 246,000 cubic feet. Still further east is a relief holder having a capacity of 246,000 cubic feet. East of this are the condensers, five salt water condensers, and still further east is the boiler house in which are located the boilers together with their accessories, stacks, etc. Still further east is the generator — in which are located the generators, together with steam piping, old piping, air piping, and various auxiliaries. Still further east is the coal storage bin and on the dock further is a coal hoisting apparatus. On the corner of 5th Street and Hoyt Street is located the meter house and [fol. 492] office, and in the meter house are located the station meters, and east of this is the high pressure pumping station, known as the 5th Street Station, in which are located the exhausters and engines which deliver the gas from the works holders to the transmission system. Still further east is the storeroom and blacksmith's shop, and along the northerly line of the property are located various storerooms and a pipe rack where some of the street department pipe is stored. South of this property an open space is used for the storage of cast iron pipe, etc. South of the three holders mentioned near Smith Street is located the storehouse and laboratory, further east is a small pump house and six shaving scrubbers, three outside of the buildings and three inside. Further east is a purifier house in which are located the purifying boxes. Still further east is the exhauster room in which the works exhausters are located, together with various pumps and

auxiliaries. South of the buildings described along the Smith Street front are the various tar tanks, and still further east the purifying house, which consists of four outdoor purifiers. East of the outdoor purifiers are the oil storage tanks and still further east is the tar separating system and various tar storage tanks. Also a pump house in which are located pumps for handling the tar and oil. On the Canal is located a runway for the disposition of ashes to barges on the Canal. South of the oil tanks and purifying house is an open coal storage which extends from Huntington Street to Smith Street and nearly to the purifying house marked I. Along Huntington Street there are various small bins and storage sheds and on the Canal [fol. 493] near Huntington Street a coal-loading platform and a shed. On the northeast corner of 5th and Hoyt Streets which is shown in the Sub-Plant Lot, No. 25 Block 468 described, a five million cubic foot capacity holder is in the course of construction as of June 1, 1923. It is completed and in use and its capacity is 5,000,000 cubic feet.

As of June 1, 1923, the various capacities are: the daily gas manufacturing capacity as of June 1st, 1923 was 16,000,000 cubic feet. The present daily manufacturing capacity is 27,200,000 cubic feet. The coal storage as of June 1, 1923 was 80,000 tons, the oil storage as of June 1st, 1923 was 1,367,640 gallons. The present coal storage and oil storage are the same. The total works storage holder capacity is 738,000. The Fifth Street Holder Station capacity is 5,000,000 cubic feet. Since June 1st, 1923 we have installed one waste heat boiler. In the generator house, an extension has been made to the boiler house, to the north of the boiler house shown on the print, in which are located three new boilers. We have installed three new generator sets in the generator house; we have installed two new station meters in the meter house. Since June all of these pieces of apparatus are now complete. The boilers are not yet in use. They are practically ready for use. The oil is delivered by barge to the mouth of our pipe lines and pumped from there to the oil storage tanks. The coal is delivered by barge and delivered by means of coal hoist either to the coal storage bin marked "F" or to the coal tank, over the generator house marked "G."

[fol. 494] Map No. 6 shows the Equity Works. On Maspeth Avenue is located the office buildings. Also the station meter room, purifying house and pipe shop. South of the pipe shop is the room containing the condensers, or some of the condensers, and south of that the generator house and blower room. At the easterly end of the property is the relief holder having a capacity of 430,000 cubic feet, and east of the relief holder is an iron tank used for settling tank in connection with the tar separating system, and south of this are the tar tanks and tar pumps. East of the tank mentioned is an engine and exhauster room in which are located the exhausters for handling the gas through the plant. South of the generator house is a coal storage bin and to the northeast of that is the boiler house, in which are located the boilers together with their accessories. Still further east is a small stable, and east of that are the oil storage tanks. The wavy lines shown on the map are old boundary lines, and an old creek ran down through there. It is now dried up, with the exception of a small portion south of our property there. The portion on our property is all filled in. The portion just south of our property here is still open. That is the dry bed of an old creek around the corner of the property. There are four generators—four three shell generator sets on that property.

The daily manufacturing capacity of the Equity Works as of June 1, 1923, was 2,500,000 cubic feet. The coal storage capacity was 3,200 tons and the oil storage capacity 209,000 gallons. The capacity of that relief holder is 430,-[fol. 495] 000 cubic feet. The oil is delivered by pipe line from the Newtown Creek to our oil tanks, over property belonging to the Chapman Docks Company. The length of that pipe line is 1,400 to 1,500 feet. That is, oil comes by water up Newtown Creek and is delivered by a pipe line over the property of the Chapman Company to these works. These works are operated by the employees of the Brooklyn Union Gas Company and the Brooklyn Union Gas sells the gas. Coal is delivered by barge in the Newtown Creek and delivered by trestle over the Chapman Dock Company's property to our coal storage bin. There have been no major additions or withdrawals since June 1, 1923, so that the capacities are the same. The Chapman Docks are

south of the property shown. That is the coal trestle marked "Coal Run." It is down there in the corner and that indicates the direction of the Chapman Docks. It is a great deal shorter to carry the coal there as to pipe the oil. I think about 700 feet, if I remember correctly, to the point where the coal is delivered. That is, the pipe line is longer than the coal run. We have no storage holder at these works.

Sheet No. 7 shows the Front Street Station. This is one of the holder stations, and located on this property are two storage holders. Holder No. 4 has a capacity of 580,000 cubic feet and Holder No. 5 has a storage capacity of 1,146,000 cubic feet. Located in the centre of the property on Front Street is the exhauster house, in which are the exhausters for handling the gas from this station to the transmission system, and south of that is the boiler house in which are located the boilers, et cetera, for operating the [fol. 496] exhausters and heating the holders. On the easterly boundary of the property are the coal bins and paint storage, and in the centre of the properties is a small building known as a governor house. On York Street east of No. 5 Holder is a dwelling house with its yard which extends back into the property. It is rented. The total holder storage capacity is 1,726,000 cubic feet, and the coal storage which is small coal, about 400 tons, steam sizes. That coal is used to generate steam for heating the holders and for operating the exhausters. There have been no major additions or withdrawals at this station since June 1st, 1923. Coal comes there in wagons.

No. 8 sheet shows the Plymouth Street Station, on which are located three storage holders, No. 1 has a capacity of 296,000 cubic feet, No. 2 has a capacity of 299,000 cubic feet, and No. 3 has a capacity of 301,000 cubic feet. Located between holders No. 1 and No. 2 is a governor house and watchman's shed. That governor house is a brick structure. In the center of the property is a circular valve house, also a brick structure. On the corner of Water Street and Gold Street are three dwelling houses and a yard space behind them. North of the dwelling houses is a boiler house in which is located the boiler for heating the holders. East of the property occupied by the dwelling houses is a coal bin. I don't know whether those houses

are occupied or rented — employees of the company. East of No. 1 holder is located the garage and wagon-shop and paint shop, where our automobiles are painted and repaired—body work repaired, upholstering and that class [fol. 497] of work—together with the office of the man in charge of the repair work and painting. The total holder storage capacity of this station is 896,000 cubic feet. The coal storage capacity is about 50 tons. That coal there is used for making steam to heat the holders in the winter time; to keep the water from freezing in the holders. The dwelling houses are three story brick. There are two families in No. 67 and three families in each of the other two. That is my impression right now. There have been no major changes since June 1, 1923. In other words, the capacities of the holders are the same.

Sheet No. 9 shows the Rutledge Street Station property is occupied by a holder having a capacity of 1,056,000 cubic feet. At the corner of Rutledge Street and Kent Avenue is located a storeroom for supplies used by the shop distribution department. South of that is an open shed or passageway through from the street, and south of that is a pipe rack for the storage of steel and wrought iron pipe, and south of that is another storeroom. To the east of storeroom D is located a garage, in which is located one of the emergency wagons, also the quarters for the men who operate the emergency wagon. Farther east is the exhauster house in which the exhauster used for handling the gas in the transmission system is located, and farther to the east are the boilers which make the steam to operate the engines, and also to heat the holders. On the northeast corner of the property is a valve house in which are located the valves which control the flow of gas in and out of the holder. The coal storage is about 50 tons, used for making [fol. 498] the steam. Coal is brought there in wagons. There have been no major changes since June 1, 1923.

Sheet No. 10 shows two holder stations of the Company, one known as the Skillman-Peoples holder station, and one known as the Skillman-Nassau Holder Station. The Skillman-Peoples holder station has two holders, one with a capacity of 553,000 cubic feet, and one having a capacity of 539,000 cubic feet. North of No. 1 Holder is the shop of the Holder Distribution Department in which are the tools

and part of the storeroom of that department, together with the office of the foreman of the Holder Department and the boiler room in which are located the boilers heating the holders. The total holder capacity of the Skillman-Peoples station is 1,092,000 cubic feet. The coal storage capacity is about 50 tons. There have been no major additions or withdrawals since June 1, 1923. South of the Skillman-Peoples station on Skillman Street is a holder station known as the Skillman-Nassau Station, on which is located a holder having a capacity of 304,000 cubic feet. Together with a valve house and boiler house. In this boiler house is a boiler for heating the holder. There have been no major additions or withdrawals to this Nassau Skillman Station.

Sheet No. 11 shows the Wythe Avenue Holder Station. On this property are located two holders of 5,000,000 cubic feet each. On the corner of Wythe Avenue and North 12th Street is located an exhauster house in which are the exhausters and the necessary engines which handle the gas from the holder station to the transmission system. East [fol. 499] of the exhauster house on Wythe Avenue is the boiler house in which are located the boilers for making the steam to operate the engines and exhausters and also to heat the holders. The coal storage capacity is about 200 tons. The total holder capacity is 10,000,000 cubic feet. Since June 1, 1923 we have installed on additional high-pressure exhauster and engine. The exhauster has a capacity of 85.3 cubic feet per revolution, known as a Connellsville Exhauster driven by 24 by 24 Buckey- engine. The engine is rebuilt since June 1st, 1923. We owned part of the engine and bought some additional parts for the engine. We have also installed one new boiler having a capacity of 300 horse power, and removed one boiler having a capacity of 100 horse power. We discarded the old boiler.

Sheet No. 12 shows the Scholes Street Station. On this property is a holder having a capacity of 1,499,000 cubic feet. On the corner of Scholes Street and Bogart Street is an exhaust house in which are located the exhausters and engines which handle the gas from this holder to our transmission system. East of the exhauster house is the boiler house in which are located the boilers for making steam to operate the engines and to heat the holder. There is also a frame building which at one time was used as a photo-

meter room and is now used as a storehouse. On the east corner of our property near Scholes Street is a coal bin having a capacity of about 150 tons. That is all. There have been no major additions or withdrawals made to this station since June 1st, 1923.

[fol. 500] Sheet No. 13 shows the Belmont Holder Station. On this property is located a holder having a capacity of 3,250,000 cubic feet. On the corner of Belmont Avenue and Williams Avenue is the exhauster house in which are located the exhausters and engines for handling the gas from the holder to our transmission system. South of the exhauster house is the boiler house, in which are located the boilers for making steam to operate the engines and heat the holders. Further south is a coal storage and ash bins. The coal storage at this station is about 300 tons. There have been no major physical additions or withdrawals since June 1, 1923.

The exhausters are used to supply our transmission system in some cases. We make a distinction between our transmission and distribution systems. This gas first goes into our transmission system, and then into our distribution. In some instances we distribute gas both ways from these holders stations by means of the exhausters to our transmission system and by means of the governor or valve control to our distribution system. These exhausters are used only to supply gas to our transmission system, the exhausters are; but the transmission system in turn supplies gas to our distribution system. It goes directly from our transmission system to our distribution system by means of governors.

Sheet No. 14 shows what is known as the Union Station and Citizens Branch. On this property is one holder having a storage capacity of 500,000 cubic feet. The property at the corner of Atlantic Avenue and Ashford Street is occupied by what is known as the Citizens Branch. In this [fol. 501] building the consumers pays his bills and various business of the company is done. The records of that branch are kept by bookkeepers. In the basement there is a storehouse for the street department. Adjacent to this building is a boiler house where steam is made to heat the holder and the office building. Further south on Ashford Street is an extension of the office building, and below, an-

other part of the storeroom for the Street Department. Still further south is a garage and Street Department Gasoline Storage. It is just for garage purposes. On Cleveland Street there is a pipe rack where the steel and wrought iron pipe is stored, and also a blacksmith shop near Atlantic Avenue. Union Station refers to the holder and the Citizens Branch to the office building. The space between the blacksmith shop and the pipe rack is used for the storage of cast iron pipe. There is a difference in the retaining wall of about 4 feet, higher on the Cleveland side than on the office side. In other words, there is a platform on the edge of that pipe yard; coal storage capacity of about 100 tons used for making the steam the purposes of which you have described. There have been no major changes since June 1, 1923.

Sheet 15 shows the property known as the Jamaica Station, on which is located a holder having a capacity of 500,000 cubic feet; and east of the holder is a building in which are located the governors and valves for controlling the flow of gas, and the engines and exhausters for handling the gas; and still further east the boiler room in [fol. 502] which the steam is made to operate the exhausters or heat the holder. East of the boiler room is a coal bin and storerooms and a pipe rack for the storage of steel and wrought iron pipe in the centre of the property, together with small storage sheds and space for the storage of cast iron pipe and fittings. (Marked Plaintiff's Exhibit No. 147 for Identification.) This Jamaica station is operated by the Brooklyn Union Gas Company employees who are engaged in its operation are carried on the Brooklyn Union Gas Company payroll. Plaintiff's Exhibit 147 for Identification is a copy of a lease dated January, 1899, between the Jamaica Gas Light Company and the Brooklyn Union Gas Company. I might explain to counsel on the other side, the original lease of this property to the Brooklyn Union Gas Company was lost in some way during the last rate case. It was never recorded and I cannot produce it. There is no question but what this is a copy of it, and I assume that you will take that.

Plaintiff offered this lease in evidence Exhibit 147 for Identification.

No objection.

The Brooklyn Union Gas Company is the owner of the structures on this property. No major changes have been made since June 1, 1923.

Sheet 16 shows the Keap Street Station. On this property is located a holder having a capacity of 370,000 cubic feet, together with a valve house in which are the valves [fol. 503] for operating the holder, and a boiler house in which is located a boiler for making steam to heat the holder. There have been no major physical additions or withdrawals since June 1, 1923.

Sheet No. 17 shows the general office building of the Brooklyn Union Gas Company at 176 Remsen Street. The cellar is occupied by the heating apparatus and the vaults and storerooms. The first or main floor is occupied by the Brooklyn Branch, which is one of our branch offices in which the business with the consumer is done and the records of the branch are kept; also the new business department, which is used for the sale of appliances to the public. The portion to the right is known as the Commercial Department, and the demonstration building is occupied in the cellar by the indexers and collectors from the Brooklyn Branch, one of the commercial branches which handles the business of the public, also a storehouse for the storage of stationary lamps and that class of material. The first floor of this building is occupied by the showrooms for the display of appliances. The second floor, or rather the mezzanine floor above the first floor, and the second floor are both occupied by the clerks of the New Business Department. The second floor of the main building is occupied by the Shop Distribution Department, the Treasurer's Office and the claim department. The third floor is occupied by the Street Department and the Holder Distribution Department. The fourth floor is occupied by the superintendent of the branches, and the fifth floor is occupied by the Engineering officers, and telephone space in the addressograph department, and the sixth floor is the executive floor in which [fol. 504] are located the officers of the company and the

auditor's office; and the seventh floor is occupied by the construction department and small attice is occupied by a blueprint, printing and drying room. The commercial department and demonstration building is on Block 40 there. The purchasing department is on the mezzanine floor between the ground floor and the first floor. The auditorium is on the seventh floor, which occupies the seventh floor as well the construction department. No major changes had been made since June 1, 1923. That drawing also shows premises known as 180 Remsen Street, that is the property occupied on lot 40 known as the Commercial Department. That is a separate building connected with the main building, through the first floor and the second floor.

Sheet 18 shows the Metropolitan Branch. This building is a three story and basement building for the doing of business with the public. In the cellar are the washrooms and the heating apparatus. On the first or main floor is the exhibition room for showing appliances, the manager's office, and the desks for making applications for gas and paying bills. The second and third floors are occupied by the bookkeepers who keep the records. Charges have been made there on the portion marked Lot 72. That building has been extended to cover that lot to the height of the building. That extension was made since June 1, 1923. It covers all of that lot and is occupied at the present time for the same purposes on the respective floors.

[fol. 505] Sheet No. 19 shows two buildings on St. James Place, one marked 197, which is occupied by the Shop Department for instruction of the fitters and indexes and collectors, and our men who come in contact with the public are instructed here in the method of treating the public and reading the meters and making various connections, connecting up different kinds of apparatus, and adjusting apparatus. On the second floor is a small auditorium or meeting room where the lectures are given from time to time on this subject. No. 191 is occupied by the laboratory. The first floor is where our chief chemist has his office, and in the back are quarters for the physicians who examine all men before employment by the company, and the second floor is occupied by the laboratory where the chemical work is done. There has been no major changes in either of these buildings, since June 1, 1923.

No. 20 shows the Williamsburg Branch. The basement of this office building is occupied as a storehouse with heating appliances. The first floor which is just below the level of the street is occupied by the New Business Department for the demonstration of appliances. The first floor, which is just above the street level, is occupied by the manager's office and the counters where customers make applications for gas and pay their bills are attended to, as well as for the exhibition of appliances. The second and third floors are used by the clerks for keeping the records. No major changes have been made since June 1st, 1923.

Sheet 21 shows 130 Atlantic Avenue, which is a four story and basement building used as a storehouse entirely for the appliances. There have been no major changes [fol. 506] there since—

Sheet No. 22 shows the warehouse, the Nassau Branch at 1024 and 1016 Nassau Street. The main building is occupied in the basement by the Shop Department, shops and storerooms. The first floor is occupied by the Nassau Branch where the manager has his office and where the customers make applications for gas and pay their bills and see the apparatus for sale. Also on this floor is the demonstration for the various industrial apparatus. The second and third floors are occupied by a warehouse for the storage of appliances. The portion marked Lot 27 is used as a garage and as a loading room where the appliances are put on the trucks to be delivered to various consumers. There have been no major changes there since June 1st, 1923.

The Brooklyn Union Gas Company makes carburetted water gas exclusively. The raw materials used in the manufacture of carburetted water gas are coke or anthracite coal and gas oil. Anthracite coal for fuel purposes, and the gas oil, what is known as oxide, and various other incidental materials like water and oil, and numerous other minor materials. The coal, taking our plants as a sample—the coal is received at the dock and weighed. It is delivered to the generator house and the amount of coal used by each machine is weighed to determine the consumption of coal. The coal is placed in a cylindrical shell lined with firebrick known as a generator. In connection with the generator are two other compartments known as a car-

buretter and superheater. The carburetter and superheater are both filled with firebrick the shape of the ordinary [fol. 507] building brick. These brick are laid in with spaces in between, so as to form passageways for the gas to pass down or up or around the brick. In starting the machine the anthracite coal or coke coal known as broken or grate coal is placed in the generator and lighted and then by means of high pressure blast is heated to incandescence—by the time the fuel is heated to the proper temperature, the checker brick in the carburetter and superheater have become heated, to what to the eye looks about a cherry red. The blast of air is then shut off and steam is passed through the generator fuel bed, the steam going through this incandescent fuel, either anthracite coal or coke, the steam is decomposed and combines with the coal. We then have hydrogen and carbonic oxide or CO. They come off mingled as a gas, about half and half. The combination of these two gases is known as blue gas in the trade, because it burns but it does not have any light, it just burns with a blue flame. It has a heating value of about 300 British thermal units. When this gas leaves the generator it goes to the carburetter. At the top of the carburetter where the blue gas enters, oil is sprayed over the checker-brick so that the oil comes into intimate contact with the blue gas coming from the generator at this point. The two gases or the blue gas and the oily vapor, meeting on the hot checker-brick, combine to form illuminating gas. The amount of oil controls the heating value produced and increases the heating value. We have a heating value of about 300 British thermal units in the blue gas and, by the addition of oil, we can increase the heating value of the mixed gas. That is the purpose for which the oil is added. [fol. 508] It also increases its illuminating power. It has no illuminating power before. It does both. The combined gas passes from the carburetter to the superheater, which is merely a fixing chamber to make it a permanent gas. The checker-brick in the superheater is heated about the same temperature as the carburetter is. It might be that the gas leaving the carburetter would not be perfectly combined, the hydrocarbons of the oil with the blue gas that came from the generator, so that the superheater gives them a longer passage through the hot checker-brick—they

might have a longer carburetter to accomplish the same purpose, but they are made in two chambers for the sake of economy of manufacture. The gases become more intimately or thoroughly mixed. The gas leaving the generator goes to the relief holder which I have mentioned in the description of the plants. Owing to the fact that the manufacture of gas is an intermittent process, it is necessary to have something to act as a cushion to take care of the discharge. They make gas and then stop making gas, and then they make it again, at intervals, depending on the materials used. They make gas in the neighborhood of four minutes at the present time, and they are blowing from two to three minutes. These conditions will change, depending on the kind of material used and the product they are after. The gas, after leaving the generator, goes to the relief holders. I don't know just why they call it a relief holder, but it acts as a cushion. Then the water valve of the wash box holds it and prevents it from going back again. The gas is pumped from this relief holder by the exhausters [fol. 509] that I have mentioned, which are really pumps, and driven through the rest of the apparatus. The gas is then a very hot gas, upon leaving the superheater, and is cooled somewhat in the wash box, the water that I spoke of, and it is cooled again in the relief holder. Then it goes to the condensers, which reduce the temperature because the salt or fresh water is flowing through tubes three or four inches in diameter and 12 to 14 feet long, and the gas is circulating around those tubes. In that way the gas is cooled and the tar is removed at the same time. The condensation I refer to is a condenser in the sense that it condenses the volatile tar. The gas leaving the condensers goes through tar extractors which remove nearly all the balance of the tar in the gas. The tar extractors consist of cylindrical shells which telescope into each other, and they are perforated so that the gas simply by going through the various perforations, the friction removes a great deal of the tar that is left. That is, there is a primary and secondary extraction, of tar; first, the condensation of the volatile tar and the second seems to be a sort of mechanical sieve. We get the tar in the wash box and from the condensers. We get it from three places. By that time we have removed nearly all of the tar, but there is some very

light tar left. The gas goes through these perforated tubes, then it goes to the shaving scrubber; the shaving scrubber is a cylindrical vessel filled with wood shavings. The friction of the gas passing through these shavings and the fact that the shavings will absorb, themselves, a great deal of the oily vapors when the gas goes through [fol. 510] for its final cleaning, the gas is now a very clean gas. Some of the tar comes in this way, some from the wash box which is the first thing the gas goes through, some of it is deposited in the relief holder and some comes from the condenser, some comes from the tar extractors by mechanical means, and some comes from the shaving scrubbers by friction of passing through the shavings and the absorption of the shavings. The gas is then, as I say, a dry gas, and passes through the purifiers where the hydrogen sulphide is removed. The purifiers are rectangular boxes filled with iron oxide and shavings. The iron oxide is cast iron borings from the boring mills that have been rusted and mixed with shavings, to make it a porous mixture so that the gas can pass through it. The chemical action of that removes the hydrogen sulphide. The gas leaves the purifiers and is then measured by the station meters. The quantity of gas passed by the station meters is corrected to 60° so that one works may be compared with another. My standard of measurement is taken at 60 degrees Fahrenheit and 30 inches of mercury. That is the barometric pressure. After going through the station meters and being measured, it goes to the storage holder and is then ready for distribution. In our system it leaves the storage holders under pressure in many cases and is pumped into the transmission mains, the transmission system, by means of exhausters. The pressure carried in this transmission system is from three to six pounds per square inch. From this transmission system are numerous governors which feed into the distribution system, [fol. 511] which carries the necessary pressure to distribute it to the consumer. The gas is also distributed directly from the holders through governors to other parts of the distribution system. From one holder to another, through the transmission system. The distribution system is supplied in two ways: One from our transmission system through governors; two from our holders through

governors. A governor is a piece of apparatus which controls the pressure. It serves the analogous purpose of a valve, perhaps. We use a valve in many cases instead of it. The transmission system is the name applied to the connecting links between the various holders and all the holders are connected up in this chain of transmission connections. As well as the distribution system getting its gas from the holders, there are some more of these governors or valves located on the transmission system at various points and feeding from the transmission system. Having been in the holders first, it is pumped into the transmission main. We have a high-pressure gas in this transmission main, with numerous openings or valves or governors leading into a distribution system which honeycombs the whole city. We have say 5 pounds pressure in our transmission system and want from two to six inches pressure in our distribution system in order to supply the consumers. A pound is equal to 27 inches of water, so that two pounds would be 54 inches of water. We have that high pressure go up as high as six pounds. We have this high pressure in our transmission system for the purpose of moving the gas rapidly. Our distribution system must, according to the Public Service Law, have from two to six [fol. 512] inches pressure; so that our governors reduce this pressure from the transmission system of 54 inches, say, if it is down to two pounds down to four inches pressure to feed that to the consumer through the distribution system. Any holder can take gas from the transmission at any time it needs it, because the pressure in the transmission system is higher than that thrown by any holder. That condition could arise, but it does not arise because we must have gas enough to take care of that other holder. It is true in a way that in this loop around among the holders, the pressure will naturally equalize itself and if the quantity of gas falls in a given holder, the tendency will be to supply that deficiency and fill that space, thus equalizing the pressure all around the transmission system, but of course if a holder is low the man in charge of that holder station simply opens the valve and takes in some more gas from his transmission system. Gas does not go from the transmission system directly into the distributing system out into the city main at any time without passing through

a holder, but it has been through a storage holder before it gets into the transmission main. It goes from the works to a holder, to the transmission main, to the distribution system. All of the gas goes, in the first instance, to some holder and then from that holder passes into the loop and when once in that loop may or may not go to another holder. It may go out into the city mains, depending upon the demand that is made for it, and that pressure is more or less equalized by the demands that are made on the operation of these valves, but the entrance of gas into any particular [fol. 513] holder is regulated by human agency at the holder. In other words, it is not an automatic proceeding; but a man in charge of the holder sees his holder going down and lets in some gas to fill it out. We could not supply gas to the consumer such as is in your transmission system. We would have to reduce it. The extent of reduction is caused by the ruling of the Public Service Commission. We would have to reduce it anyway; we could

The coal is weighed as it comes over the dock in order to check the weights from the shippers. The coal leaving the dock can go either to the generator house for use, or to our storage pile. When it goes to the generator house for use it is again weighed in order to determine the consumption of coal or the use of coal. The oil is measured in oil tanks as received, the cubical contents of our own oil tank being taken. We measure from the top of the tank to the surface of the oil. This measurement is taken when the cargo starts to deliver and at the finish of delivery. These tanks are read every twenty four hours. When I say "read" I mean the measurement is taken every twenty-four hours to determine the amount of oil consumed during the twenty four hours just passed. The distance from the top of the tank to the surface of the oil is measured, and knowing the diameter of the tank, we know the capacity at different heights of oil. We use a plumb bob on the end of a steel tape. There are two standards for the measurement of gas. The heating value standard, or British thermal unit, and the candle power standard. Prior to Oc- [fol. 514] tober 1, 1922 the company operated under candle power standard, and since October 1, 1922 under the heating value standard.

At the time the order in this case 108 came out, Pamphlet "State of New York, Public Service Commission, Albany,

N. Y., Report in the Matter of Standards of Purity, Illuminating Power and Heating Power of Gas and Standards for the Measurement Thereof in the City of New York and Suburban Territory (Case No. 108) August 30, 1922," we received a copy of that pamphlet from the Commission.

Objection.
Overruled.

I cannot see that we are concerned with that. He was, at that time, Gas Engineer for the Commission.

Plaintiff offered Exhibit 148 for Identification.

I did take part in experiments with gas subsequent to the receipt of the order in Case No. 108. They were conducted at the Rye plant of the Consolidated Gas Company in September or October 1922, I think. I don't know the exact name of the plant, but the plant at Rye, New York, and to those experiments I took appliances such as used in the Plaintiff's territory and experiments were made with those appliances. Some of these other engineers with whom I conferred were present at the various experiments and taking part.

[fol. 515] CHARLES C. ATWOOD

January 9th, 1924.

Direct:

In October, 1922 after the receipt of the order of the Public Service Commission in case 108, I came to the conclusion upon the number of British thermal units which the appliances in the territory of the plaintiff, as then adjusted, could safely and efficiently burn and I was familiar with the type of appliance used in the territory of the plaintiff.

I experimented to determine the proper adjustment that was necessary to take care of the change in heating value, which it would be necessary to make in order to comply with the Public Service Commission's order in Case No. 108. The burners on the district were adjusted to consume gas of 22 candle-power. In order to comply with this order it was necessary to supply gas consumers with 537 b. t. u.'s average thermal content. As an average of 537 the minimum is 525. I did not think it well to drop the heating value

from a heating value of 22 candle-power down to 537 b. t. u.'s without burner adjustments. The question was how far we could go in that drop in the heating value without burner adjustments.

I have not stated the heating value of 22 candle-power, because that is a very difficult thing to state. It varies greatly. I felt that there was a certain heating value which could be burned in the burners as adjusted for 22 candle-power gas. The question was to find out what that heating [fol. 516] value was. In order to do that burners similar to the ones that were on the district were adjusted to what is known in the gas business as a soft flame, a flame that has a little yellow tip. Those burners were taken to Rye simply because at Rye they had facilities for making gas of various heating values, and there the burners could be tried with different heating value gas. After the burner adjustment to what we thought was right, we took them to Rye and tried them with 600 b. t. u. gas and found that they operated all right. On that basis we cut the heating value to 600 b. t. u.'s without any burner adjustments. We adjusted them as they were on the district. We took the burners similar to those used in our district and used 600 b. t. u. gas and found that we could burn 600 b. t. u. gas without adjustment on them and give fairly good service. Then we tried reducing the b. t. u.'s to about 550, with the result we found that the burners would have to be adjusted again to take care of that condition.

The effect of using the low heating value gas on the burners as adjusted for 600 b. t. u. gas was that a flashing back took place in the burner, a snapping back, and the gas burners at the gas office, the flame is very short as the burners were adjusted then, so as to be unsatisfactory for use, and the service would be very poor, that is only the calorific feature as used in the mantle burners, stoves and ranges, unless adjustments were made between the gas at 600 and the gas at 537 or 550.

[fol. 517] We took burners adjusted as they were at the time for the consumption of 22 candle-power gas to a place which was equipped for experimenting with gas of various thermal content. We tried these burners with gas containing 600 b. t. u.'s and found that they would give fairly satisfactory service and tried them with gas containing 550

b. t. u.'s, and found that the service was not satisfactory. We therefore determined that with the burners in their then condition we might reduce the thermal content of our gas to 600. And that conclusion was reached as the result of our experiments and our general knowledge of the chemistry of gas. I would add to that my study of the proposition over that period. Then the gases which the company was furnishing for sale was at that time reduced to 600 British thermal unit*ed*.

Those present at the time these experiments were made, other than myself, were Mr. Lewis superintendent of the Shop Distribution Department, a Mr. Rasch and I think some of the other men were there and some of them were not. I think they call Mr. Rasch the Engineer of Utilization of the Consolidated Gas Company. There were two, and sometimes three chemists from the Consolidated Gas Company, I don't remember their names; sometimes one and sometimes another. The actual experimentation covered not more than three or four days as I remember it, about three or four days. It was necessary to change the quality of the gas in the period in between those tests. [fol. 518] We came back here and tried other gas and then went back to Rye, so that the whole period covered by that was a month, maybe. We tried various burner adjustments on the district—adjusted them in the office and then took them out and tried them on the district with the gas to see how they worked. The experiments at Rye were not the only experiments. The experiments were all of the same general nature in that it was a question of determining the proper burner adjustment, but we were working with the 22 candle-power gas that we were then making in Brooklyn, whereas at Rye we were working with gas of different heating value.

It was experimentation, in the adjustment of the burner at one place with gas of a different thermal content and here in Brooklyn with gas of 22 candle-power.

A "flashback" where gas has too low a heating value for the burner adjustment and the match is applied to the burner, the gas instead of lighting at the mouth of the burner, there is a small explosion and the gas lights at the gas orifice instead of lighting at the mouth of the

burner. In lighting gas logs, that is not a flashback. I think that is more of an explosion, because we have there an actual amount of air in the space inside of the log, and we put an amount of gas in the space inside of the log and that makes the explosion and we really get an explosive mixture in there that explodes. Nearly all of the [fol. 519] appliances are based on the Bunsen type of burner. The Bunsen burner is so constructed that the gas issues from a small orifice around which is a chamber known as a mixing chamber, and the air is drawn into this chamber and mixed with the gas by means of the pressure of the gas leaving the orifice. That is known as the primary air. The primary air enters near the base of the burner, before it reaches the point where the gas burns. The mixture of the gas with the primary air then reaches the atmosphere and the secondary air is drawn from the atmosphere, and then the gas burns at the orifice of the burner.

When the appliance is properly adjusted the primary air reduces the gas to the thermal content, in the neighborhood of 200 British thermal units. The heating power of the mixture of air and gas is about 200 b. t. u.'s. With proper adjustment to take care of the quality of gas the thermal content of the mixture of gas and secondary air after the gas reaches the secondary air about 92 British thermal units. Both of those figures have a range of variation; the 200 and the 92—that is a small range either side of that. We are reaching the proper ratio of gas to air to give complete combustion of the gas. Too little primary air produces a long rather flickering kind of a flame with possibly a yellow end to it, and that depends entirely on how much too little primary air is given to it. If there were no air at all on this gas, burning it in that way, it [fol. 520] would be a yellow luminous flame. That is, as you allow the primary air to enter that yellowness is modified until you get to the familiar blue flame of the Bunsen Burner and the illuminating property is greatest when there is no primary air. And then by the addition of primary air you get to the point where you have a flame that is substantially without illuminating power, other than to define the flame; by the introduction of the primary air

you consume the carbon that otherwise is incandescent in the luminous flame. That is further shown by the fact that if you put a receptacle of any kind over a luminous flame you have the deposit of lampblack. The effect of this elongated yellow flame impinging on a receptacle which is being heated on the stove is a deposit of lampblack and the formation of carbon monoxide, due to incomplete combustion. That applies, of course, on all top range burners, we have the deposit of lampblack; and this takes place particularly in water heaters where we have cold water running through a coil and the gas impinging on this cold coil, the combustion is further retarded, because the flame temperature is reduced and lampblack is deposited and carbon monoxide is formed.

There *were* also be a deposit of lampblack in the water heater. That is the one installed alongside of the familiar boiler in connection with the ordinary waterback boiler.

With reference to safety and efficiency by too little [fol. 521] primary air. It is very unsafe to operate that way, it is a dangerous condition on account of the carbon monoxide formation which is poisonous gas. In ovens and closed furnaces the secondary air is regulated by the construction of the appliance. There is very little opportunity for regulation of the secondary air in nearly all domestic appliances. The proper mixture of air and gas, including the primary and secondary, has to be taken care of by the adjustment of the primary air in domestic appliances.

Where an appliance is regulated for 600 British thermal units as a high limit readjustment is necessary in order to burn gas containing 650 British thermal units per cubic foot safely and efficiently. There are many types of appliances in use by the company's consumers that it would be a very difficult if not impossible thing to do.

Too much primary air causes a short flame and the flashing back or snapping back to the gas orifice. You find the flame right at the gas orifice. The gas orifice is just ahead of the cock which supplies the gas to the burner, inside of the mixing chamber. After it had been determined in October, 1922, to reduce the thermal content of the gas to 600 British thermal units, a force of men was organized to adjust the burners on the district, to make them capable

of burning gas 537 to 550 B. t. u quality. This force of men was started out on the district, and gradually built up. We did not start them all at once, they were trained, and they went from house to house and adjusted every burner [fol. 522] in the territory of the Brooklyn Union Company. I was in touch with and concerned with this operation. They began on October 1, 1922, and finished May 1, 1923. The force was about 150 men. They were under my supervision in that I was in direct charge of the manufacture and production of the gas, and therefore responsible for getting the proper kind of gas to take care of the adjustments that were then on the district. The men were actually in charge of the foremen, but I had a general supervision over the adjustment being made. They remained at 600 British thermal units until we completed our burner adjustment, which was on May 1, 1923. Then we reduced the heating value to 590 on May 1, and on May 15 we reduced it to 580 British thermal units. We are still making that quality gas and were on the 1st of June, 1923. We can operate down as low as 537 to 550, or somewhere within that range. That was true June 1st, 1923, there has been no change since. I think we are at the high limit now, 600, the low limit is between 537 and 550. Gas containing 650 British thermal units per cubic foot cannot be safely and efficiently burned in the consumers' burners in their present condition of adjustment. No adjustment has been made since June 1, 1923.

The plaintiff company before attempting to deliver gas containing 650 British thermal units per cubic foot should readjust the burners on the district, and unless such burners are readjusted we should not under any circumstances deliver gas of that heating value unless we adjust the burners. The gas should be shut off, if we do that. It would not be a safe proposition at all to deliver it. From October to May—The general nature was that we increased the size [fol. 523] of the gas orifice in many cases, allowing more gas to flow through, or we decreased the opening for the primary air. When the man got into the consumer's house he first tried the burners as they were, and cleaned them. He first made an attempt to adjust the burner by means of the air shutter, reducing the amount of primary air. If he could not succeed in getting a good adjustment that way,

he reamed the orifice by means of a small reamer, and made the gas orifice a little larger, in order to adjust for gas of a higher thermal content. The process of adjustment would be the reverse of that. The air shutter would have to be opened and, if adjustment could not be made by means of the air shutter, it would be necessary to reduce the orifice, reduce the size of the gas orifice, *reduce the size of the gas orifice* which, in most cases, could only be done by replacing the portion known as the spud, which contains the gas orifice. That would have to be replaced. It would take longer to adjust up. In other words, the adjustment necessary for 650 British thermal units is a more difficult process than the process of adjustment through which we went in 1922 and 1923.

In October, 1922, in many cases it would have been more difficult to have adjusted it for 650 B. t. u.'s than it would be to adjust it for 537, because the orifice would have to be closed or replaced. I contend now you have got to fill it in or replace it. The effect of delivery to the appliances now in plaintiff's territory, as now adjusted, of gas containing not less than 650 British thermal units per cubic [fol. 524] foot would be the formation of carbon monoxide and a deposit of lamp black. There is a habit rule or usage established by custom, prescribing the conditions of temperature and atmospheric pressure under which the gas is measured for heat content. Gas is measured in this country at 60 degrees temperature and 30 inches barometric pressure. That is and has been the usage in our company. The purpose for which oil is added in the manufacture of carburetted water gas, is to increase the illuminating power and the heating value. The technical word for this oil is a hydrocarbon or gas-oil. The thermal content is reduced in transmission. The causes of such reduction are the thermal content decreased, due to the fact that gas in passing through a gas main is cooled and condensation takes place, which condenses out some of the hydrocarbon vapors, and also the fact of gas passing through a gas main, the friction further removes some of the hydro-carbon vapors. The heating value being partially dependent on these hydrocarbon vapors, it is reduced in that way.

There are two forms or causes of condensation, one caused by friction, and the other caused by a lowering of

temperature. In each case it is condensation and condensation occurs from each of those causes or both. It also takes place in our storage holders on account of the change in temperature. It takes place in the mains and some in the services and some in the meters, the consumers' meters. [fol. 525] This variability depends upon the thermal content. The 650 is much more susceptible to loss due to transmission, on account of the fact that there are a greater number of hydrocarbons in it, and the hydrocarbons are the portion of the gas which condense in the mains. The greatest distance in the Plaintiff's system, between works and consumer is probably eight to ten mi*l*s. I have quite definite information on that.

I can from my knowledge and experience state what quantities of oil and generator fuel will be required in the production of carburetted water gas in apparatus of the type in use at the Plaintiff's plants under prevailing conditions and with prevailing methods of operation, to furnish gas of a standard of not less than 650 British thermal units per cubic foot, measured under conditions of 60 degrees Fahrenheit temperature and 30 inches of atmospheric pressure.

The quantities of oil and generator fuel are not less than 4.5 gallons of oil and 32.5 pounds of generator fuel per thousand cubic feet of gas made. In this manufacture there will be from the oil, water gas tar, 6.48 pounds per thousand feet of gas made. There is an equivalent generally recognized by engineers between this tar and coal, comparing the heating value, the equivalent in coal, of 6.48 pounds of tar, is 9.07 pounds of coal.

Based on my knowledge and experience, 670 B. t. u.'s must be contained in the gas when measured at the works, [fol. 526] under the conditions of temperature and pressure in order that it may contain 650 British Thermal Units per cubic foot furnished to the consumer. The increase in British thermal units have no effect upon the quantities of other materials as compared to the amount now used to manufacture the gas we are now making.

According to my observation changes of temperture and atmospheric pressure occur in the plaintiff's territory throughout the year. To illustrate the variation in ther-

mal content of gas at different temperatures, for example, at 60 degrees and 80 degrees Fahrenheit, gas expands when heated, and contracts when it cools, and the expansion of gas is, very roughly, one per cent, in volume for every four degrees change in temperature. Gas also expands or contracts due to atmospheric pressure, and as the pressure increases or decreases the volume of the gas decreases or increases; that is if the barometer stood, for instance at 30 inches mercury, and dropped to 29 inches mercury, the atmospheric pressure is not as great, and the gas would expand about 3-1/3 per cent. per inch, that is from 30 to 29. To arrive at the exact figures of expansion due to changes in temperature a rather complicated formula has been worked out which would give you the exact change. Instead of the rough figure of 1 per cent. for every four degrees, there is an exact factor to be used for that expansion or contraction.

There is a change there of 20 degrees, and one per cent. for each—that is a rough figure we have, one per cent. for each 4 degrees, therefore we would have a total of 5 per [fol. 527] cent. change, and 5 per cent. of 650 British thermal units is 32 British thermal units, 32½ and 650 less 32 is 618. That is, you have the same number of thermal units but a variation in the bulk of the gas. The change in atmospheric pressure, if we have the one inch change in pressure we have 3-1/3 per cent. of 650 British thermal units, or about 22 thermal units to deduct from 650 British thermal units, or 628 British thermal units. The effect of change in temperature, or the effect of change in atmospheric pressure, comes to the same resultant, namely, the variation in the bulk of gas without any variation in the thermal content.

It is impossible in the absence of some established rule, for the conditions of temperature and atmospheric pressure under which the thermal content of the gas is to be measured, to determine what quantity of oil must be added to produce 650 British thermal units per cubic foot, and along the same line the place of measuement must be determined. In answering that question I had our outlying consumers in mind. In other words, I took the word "furnished" to mean furnished to the consumer and measured at his premises.

Plaintiff offered in evidence Exhibit 146 for identifica-
[fol. 528] tion, and this closes this witness' direct. No objection.

* * * In reference to the construction work I had charge of the erection of various pieces of apparatus and buildings, and the Ravenswood is one of the plants of the Consolidated. It was at that time. I might go further than that. The Ravenswood Plant was a plant of the New Amsterdam Company which, at that time, was one of the subsidiaries of the Consolidated. Colonel Miller had general charge of the construction work at all of the plants.

After having experience as a water gas operator, that is the operation of the various water gas plants I had direct charge of the operation of these various plants, Ravenswoods and 44th Street. And then I went with the Bartlett-Hayward Company in 1917. And Colonel Miller was then vice-president of that company, I think. He left on leave of absence to take a position with the Government, a
[fol. 529] Colonel in the Ordnance Department. * * *

At the Metropolitan Works, there have been no extensive buildings constructed there within the last year or two. The "Old purifier house" and one marked "New purifier house," was constructed in 1910, I think. In this plant we have this year increased the blowing equipment, but have not installed any new generators this year. We installed a new generator about two or three years ago. The generator that we more recently installed was the one marked No. 9. The generator house was extended in 1920, I should think, or 1921, within the last few years. We just finished the construction of three waste heat boilers in this plant. They are located high up in the center of the building, the generator houses. During the time that the generator and carburetor and super-heater are being heated, the gases leaving the super-heater are passed through the waste heat boilers and in that way steam is utilized.

When machines are not in actual use, actually being used in making gas, we conserve that heat to make steam. Of course, the machine is always making gas, but it is divided into two parts the blow and the run. During the blow the heat is passed through the waste heat boiler to make

steam leaving the super-heater. This waste heat boiler utilizes heat that would otherwise be lost. That is where [fol. 530] it gets its name, and that we have found, is a balance between the cost of installation and the economy you get from it. It depends entirely upon the construction of the building, where you have to erect these waste heat boilers. They are erected up in the top of the building; the building has to be unusually strong in order to put them in. You cannot put a tall thing in a small building, you have to have a building that is high enough. The waste heat boiler is erected itself in the high part of the building. A waste heat boiler is about 15 or 18 feet high, but it must be constructed at or near the outlet of the super-heater, which is in the top of the building.

The building must extend from 15 to 18 feet at least above the superheater before you can install a waste heat boiler. I do not think I would recommend their installation under any other conditions. I have not put in a new tar extractor within the last couple of years or three years. It might have been in the third year back, but it is a little bit farther back than that, I think.

As to the coal-handling system this was operated previously to our change. The building marked "No. 1 coal shed" was and still is used as a coal shed. Formerly the coal was delivered to this shed by means of an automatic railway and taken from the shed in wagons or buggies, hoisted to the generator *flooed* by means of elevators. The coal is handled from the dock either into the shed or into a tank located in the generator house by means of conveyors and conveyed from this tank to a weigh larry, which travels the length of the generator house, and is fed from [fol. 531] this larry into the machines. Prior to this alteration our coal was moved by means of coal buggies or wagons. Now that is done by belt conveyors. The coal is taken up in the top of the generator house to some bin there and then let down into our charging machines, which we call weighing lorry and that slides along on the track up there, and you can move it from one generator to another as you want these generators weighed and then charged. That weighing lorry has been recently installed. I think in the summer of 1922. I have not installed any other charging machines similar to the Metropolitan Works. At the Nas-

sau Works we have just installed a system of coal handling, by a charging machine.

At the Williamsburg Works the coal is delivered to the coal shed or to conveyors which carry it to an overhead bin. The charging machines as specified at the Nassau and Metropolitan Works are the only ones that have that type of machine. The coal at the other plants aside from the Nassau and Metropolitan is shoveled in by hand from these buggies into the generators. I would like to qualify that a little bit. At our Citizens Works, where we have the 3-shell machines, and at the Nassau Works with our 3-shell machines, and at the Williamsburg Works with our 3-shell machines and at the Equity Works with the 3-shell machines, the coal is dumped from the car directly into the generator without shoveling. Our operating floor, when we have 3-shell machines, is on a level with the top of our generator, so that we can dump it right in the top of the generator. But in charging a Williamson machine the fire-[fol. 532] box is about a foot or two above the floor, so that we have to charge them as we would shovel coal into any box. In you might say the coaling doors.

We have installed recently two station meters. It was a different type of meter that was in there. We still have the other type as well. We have what is known as a proportional meter and we have installed what are known as wet meters. They are not of very much larger capacity. We still have the proportional meters. I think they were installed in 1910 or 1912. We are still using them in connection with these meters. We now have five station meters, three originally and added two wet meters and one proportional meter. There is a difference since 1920 I believe. I cannot tell whether that tar extractor was added previous to 1920 or since that. We did not take any out. That coal-handling apparatus as it now exists at the Williamsburg Works was installed, I think, in 1919 and 1920. There has been no very material change in the coal-handling apparatus since that time, that is, when we made our changes.

Before the coal-handling apparatus was changed to its present form the coal was delivered from the dock into the No. 1 coal shed and taken from the coal shed by means of buggies or coal wagons, raised on the elevators to the gen-

erator house floor, and from there delivered to the machines. At the present time the coal is handled from the dock into the bin and onto conveyors which deliver the coal to overhead coal bins. It is drawn from the bottom of these coal [fol. 533] bins in wagons or buggies and delivered by them to the generators. We have substituted here a system of coal conveyors for the manual handling of the buggies, to a certain extent. That is, getting it from the coal shed to the buggies. We made use of the buggies throughout before, and now we have a system of conveyors which convey the coal down to the buggies very near our generator sets. The coal enters the buggies at the place marked "Coal Bin," both coal bins. It enters the buggies there; and then it is weighed and then taken over and dumped into them. The coal is taken there, weighed and carried to the machine and shovelled by hand from the coal buggies [fol. 534] to the generators. * * *

A gallon of tar weighs 8.95 pounds, depending on the gravity. Sometimes it is heavier and sometimes lighter, but the average weight is 9 pounds, and it has a heat value of about 17,000 B. t. u. In relation to coal about 12,000 B. t. u. The percentage is 1.4. In coal one gallon of tar [fol. 535] will weigh 9 pounds. Assuming that is the weight, which is the average weight, the heating value of tar is 1.4 times that of the average solid fuel that we use, therefore the heating value is 1.4 times 9. The relation of 17,000 to 12,000 is about 1.4, so that the heating value of a pound of tar is about 1.4 times the heating value of a pound of solid fuel. I am positive of that. I don't think Mr. Woods did testify to that, but it would not change my opinion in any way if he had. A gallon of tar equals 1.4 times 9 pounds in coal, that was 12.6 pounds.

The normal recovery of tar at our works depends to a large extent on the character of the oil we are using, but the average is about the same. About 16 per cent and that varies from 14 to 19 per cent, depending upon the character of the oil that we use, but, a fair figure is 16 per cent, that will be a figure for year in and year out, I think.

I don't know the ages of any of the structures, aside from those that I have given at the Metropolitan Works or at the Williamsburg Works.

The coal at the Nassau Works is now handled from the barges at the dock onto an automatic railway which delivers the coal to another part of the coal bin located on the dock or to conveyors which carry it overhead to overhead bins, and it is fed from those bins by conveyors to the three generator houses by weighing larries in each of these generator houses, which charge the generators. That in [fol. 536] a general way is the description of it. That is the present method. The method of January 1, 1920 was to withdraw the coal from the coal pocket in coal cars and take them to the generator houses and dump the coal into the 3-shell machines and shovel the coal into the Williamson machines. The coal was forked from the ground at that time by labor and placed in buggies and then it was hauled to an elevator and there lifted to the charging floor. But there was no elevator in the generator house in which the Williamson machines are housed, and we had a sort of runway in order to get over to that operating floor. It was not much of a haul. They would have to take the coal from the bottom of the elevator over to the Williamson generators, about 75 feet and today that is fed from a weighing lorry; a charging machine somewhat similar to the one in the Metropolitan Works.

We have recently installed a new three-shell machine here with blowing equipment, since January 1, 1920 and also additional exhauster, engine, additional purifying capacity and three tar separators. We have on the Williamson sets automatic controls, both automatic and hydraulic. In order to be automatic it has to be hydraulic. We have hydraulic without automatic, but in this case we have the combination of the hydraulic and the automatic. At the Williamsburg Works we have part hydraulic and part hand.

We have only Williamson machines at the Metropolitan Works and they are all controlled by hydraulic control. At the Williamsburg Works three of the machines are operated by hydraulic control. We have seven other Wil- [fol. 537] liamson machines. They are operated manually. The 3-shell machines are operated by hydraulic control as well. We have recently constructed a large coalpocket, capacity 16,000 tons. That is now in use, full of coal. We have enlarged our connection on some of the Williamson

generator sets that serves to increase their capacity. We have also installed some increased purification capacity and an electric generator set. The capacities which I have stated as the rated capacities can be exceeded by the actual operation of the plant or lowered, within very small limits.

Referring to the Fulton Works shown on Plate 4, I don't think the coal-handling apparatus has been changed since January 1st, 1920. The coal is hoisted by means of a coal hoist on the dock from the barges in the Gowanus Canal, and delivered either into the storage shed or by means of a conveyor to an overhead bin just west of the generator house, connecting with the generator house. From there it is manually drawn by means of buggies or coal cars, out of the bottom of this tank through chutes into the coal cars and delivered by the coal cars to the generators, which are charged by hand from the coal cars. The coal cars in the generator house are pushed by hand. The coal bin that I spoke of near the generator house is part of the generator house building. We have belt conveyors there and one of them runs practically at right angle to the other. I think it was in 1919 that they were installed. I am quite certain that we would not be doing construction work of that kind [fol. 538] in November. We have put in some additional blowing units. It is my recollection that that work was all done just prior to January 1, 1920—during the summer of 1919. The exhaust steam is used in all our plants in the manufacture of gas, the exhaust steam from the turbines which operate the blowers. A number of years ago we made this alteration in this plant to utilize the exhaust steam. I maintain that we did use the exhaust steam some years ago.

There may have been alterations made in the year 1920, but prior to that we had used exhaust steam in the generators. We erected an overhead ash pocket since January 1, 1920. It seems to me the work increasing the purification capacity was done during the summer of 1919, but I may be wrong on that date. We have only made one increase in the purification capacity. I know how old the buildings are on this plate or Sheet 4. I don't know the age of any buildings, except that was put up by the United States Government. Beyond that, I know of no other buildings.

Our present method of handling coal at the Citizens Works is to take the coal from the coal barges in the Gowanus Canal, deliver it onto an automatic railway; from there deliver it to any part of the coal storage pile or to a skip hoist which delivers it to an overhead coal tank, which is part of the generator house. The coal is drawn from the bottom of the coal tank and delivered to the generators by means of coal cars or coal buggies.

[fol. 539] In 1922 we completed a change of apparatus, but not method. The method which is now in vogue has been the method ever since I have been familiar with the plant. I have not changed it in any respect. We utilize the Meade-Morrison trucks in connection with cables on the cable railway, the generators—that is the Williamson machines are fed from the coal cars, shoveled in by hand labor and dumped in on the U. G. I. machine, on the 3-shell machines. U. G. I. simply means manufactured by the United Gas Improvement people. They can be manufactured by other people, and these were manufactured by the Bartlett-Hayward Company. These kinds of machines are called 3-shell machines.

We have made very extensive improvements at our Citizens Works since 1920. My recollection is, in 1920 the daily capacity was a little more than 9,000,000. On January 1st, 1920 the capacity of the Citizens Works was rated a little bit higher than 8,500,000. Today the capacity of the plant is, 27,200,000. We have tripled the capacity of the plant, practically, within the last three years. Recently we have added to the plant six 3-shell machines, but I am not certain whether that was in 1921 or 1922. We put in four tar extractors. I am not certain whether it was one or two condensers we added. We have made an extension to the generator to accommodate the new machines, and also an extension to the boiler house. We put in three waste heat and three other boilers. We put in a tar separator and additional pumps at least three years ago. I should say it was longer; built a new exhauster house and then [fol. 540] put in an hydraulic elevator that is in part of the generator house. We have also a new engine and exhauster; four purifier boxes with brick enclosures and concrete foundations; and three shaving scrubbers. Four new wet station meters. We have seven station meters at this

plant. There is one proportional meter, a dry meter. We also removed a fresh water condenser there. I think we sold that. I don't think of any very extended withdrawals that were made during alterations. Rated manufacturing capacity of all the plants in the aggregate is 124,400,000 present capacity. Whether the capacity was 84,000,000 during 1920, at any time during that year; at the time of the greatest increased capacity, I do not know. I cannot tie the date and capacity together.

It is my recollection that our plants were of the capacity of 84,000,000, and then we entered into a contract with the Bartlett-Hayward Company to make certain improvements in the plants which would have increased their capacity to 105,500,000 cubic feet, but I am not certain of the 84,000,000.

We built a new concrete dock here within the last year or so. That is rather an extensive improvement. The dock it replaced was a bulkhead dock. A dock constructed of heavy timbers latticed together and anchored back into the ground, filled in with rubble, from the ash dump Marked T on the drawing to, I should say, about the centre line of Fifth Street extended, a distance of approximately 300 to 350 feet. The City sewer is six feet in diameter. That is laid to the top of it about, from my recollection, 10 to [fol. 541] 15 feet below the surface of the ground. I don't know where it empties into, and where it takes the sewage from. It does not dump the sewage there nor does it collect it from there. This sewer is extended beyond our property there. The sewer continues on across and runs up through that property that is known as Block 469, I think. I never saw it exposed. That is a public sewer. We have not repaired that nor built it. We haven't *anything* done anything to the sewer lately. A year, I should think or a year and a half and at that we built the dock. That dock and the sewer collapsed. The land on the canal side of the sewer slipped away from the sewer, and that side of the sewer followed the land. The land just kind of moved away from the sewer. I don't know about any propelling force to the land at all. It was prior to the construction when our repairs or our construction work was going on there at the plant. I do not think

that was cause of all that. It is very difficult to ascertain the cause of that kind of a failure. The dock failed, as to the cause of failure, I could not say. The dock slipped toward the Canal. That describes it better than anything else that I can think of. The whole structure moved toward the canal. I don't know the cause of that. It carried a very small quantity of our coal down into the canal. The City came there and investigated the sewer, I believe. We repaired it. The dock was ours. The sewer was not. We replaced this old dock by this concrete one. I have only known the dock since 1917. We have been using it right along. Boats tied up to it and we get our supplies, coal [fol. 542] and oil, that way. Those materials like the generators were delivered to our plant by barge some of them, and sometimes delivered by truck. I can't remember whether the larger pieces were delivered by barge.

When the sewer and the dock caved in we went right to work to repair it. I could not give the date that that occurred. It was completed, I think, before the winter of 1922. I am very positive it did not take us until April 30, 1923, to complete it. It was a six foot sewer and the part that had collapsed made it necessary to rebuild as a six-foot sewer. It was not a very long break. I think it was open for about 30 or 40 feet, as I remember it. Our company felt itself obligated to fix the sewer; on advice of counsel, if I remember correctly. I didn't put a shovelful of dirt on it. I was around there at the time they were repairing it, but, did not have any supervision of it. The Construction Department did the work. I think there was some contract made, but most of it was done by our own labor. It was pretty well tied together with the dock work.

Sheet 6, the Equity Works—I don't think any very major additions have been made there since January 1, 1920. I do not know how old the purifying or generator house is. It was there when I came with the company.

Our generator coal is delivered to us on this trestle called "Coal Run;" and then it is dumped in our coal shed. Then it is taken by cars, pushed by hand, through the corrugated iron runway and then to this elevator, then taken [fol. 543] upstairs to our operating floor. We have four 3-shell machines there. They are all eight-foot-six ma-

chines. Then that is dumped in the top of the generator from the cars. We use boiler fuel; boiler coal. That comes in, in the same way. A great deal of the boiler coal used here is delivered by truck, from coal yards, wherever they can pick it up.

We buy boiler coal for all of the plants, coal separately, both ways. We usually make contracts for yearly requirements for that boiler coal and that includes the coal for this plant as well. That boiler coal — usually delivered by barge and then it comes over this same coal run and is dumped into the shed. It is generally dropped from the coal run and kept under the coal run there and then delivered from there to the boiler house and that is carried in those cars or buggies and pushed by hand. This coal trestle is, I should think, twelve feet high, probably, perhaps higher than that; twelve feet down to the dock, and fifteen or eighteen feet probably to the coal run. We have considered the advisability of extending the coal trestle over to the generator room there and having a coal pocket there so that it would be right near our generator and be more accessible, but in putting in extensions of that kind, you must always compare the saving of labor with the investment. In this case we decided it would not be a saving. That is, it would be more economical for the men to push the cars from this shed up here and up the elevator and then into the machines, rather than pay a return on the investment necessary to bring it over here by cars.

[fol. 544] We do not use coke as generator fuel, entirely. Right now we have a contract with the Seaboard Coal Company to deliver us 10,000 tons, ten per cent, more or less a month, and we are using that much now. We are right now using the coke at the Metropolitan Works and at the Fulton Works, exclusively, and at our other plants we are using anthracite coal.

In so far as 1922 is concerned, as to the relative use of coke and coal for generator fuel, I don't think we used quite so much coke, but I would not be certain of the percentage. I think we used more coke during the year 1923 than during the year 1922. We used water gas tar at all our plants. We also used the screening from the anthracite coal and buckwheat coal and some bituminous coal. At each one of the plants we do that. The relative use of

the tar and coal in this boiler fuel varies, depending upon the amount of screenings which we get from our anthracite coal and which we have to burn up, and the tar that is produced, depending upon the production we are making.

Our general policy is that we will burn all of that tar. The extra steam that it is necessary to make is made with the anthracite screenings which we have to get rid of. If we do not have enough anthracite screenings, we use the buckwheat coal. In order to get the last out of the combination, we use some bituminous coal. We installed in the last three years altogether six generators at the Citizens, [fol. 545] one at the Nassau, none at the Williamsburg, *none at the Williamsburg*, none at the Equity; leaving the Metropolitan in doubt. This construction work was the result of both contract and the Company. I think that in each instance we did a large amount of work with our own staff and at the same time let contracts for other portions of the same job. Some of the people who had contracts to do the work since January 1, 1920 are The Berlin Construction Company, Bartlett-Hayward Company. The Berlin Construction, Connecticut, did the buildings. They constructed a good many steel buildings. The Bartlett-Hayward Company, Robbins Conveying Belt Company, Babcock & Wilcox Boiler Company, Deeves & Company, I think the major part of the work was done by the Bartlett-Hayward Company. They had a contract which was made during the year 1919 and which was finished a good while ago. Subsequently they had another contract.

It is my recollection that the contracts were the result of competitive bidding. I think a large part of the Bartlett-Hayward Company contract was by competitive bidding; I think some of the Robbins Conveying Belt Company was by competitive bidding; and I think some of Deeves was by competitive bidding, the last contract they had.

I testified that when I was at the Ravenswood and at the 44th Street plant I had charge of the repairs at the works. I have general supervision of repairs at works, only in that my position covers those as well as other things. We have [fol. 546] no reports on repairs, no specific report that shows repairs. I am familiar with the various repairs necessary to do at the works. The major repairs to the generator sets are the repair of the firebrick lining, the re-

placing of the checker-brick from time to time, the replacing of various valves, repairing steam lines, repairing gauges, blast lines, oil lines, oil sprays. They have to reline a generator much more often now than we used to, about once a year. Not on account of this case. Firebrick now is not as good. We have to reline a generator about once a year now. That is caused from the poorer materials than we used to get, I think, and also the fact that we are driving the machines much harder than we used to.

I think probably we did re-line all of our generators in the year 1922. I could not specify each one, but I think probably they were all re-lined during the year 1922. We re-checker them once in every thousand hours. It was not the custom to re-line the generators, once in three years. It has been the custom to re-line annually from back in 1918 and 1917, along in there. Prior to that we used to go a year and a half or pretty nearly two years, sometimes for the two reasons I have given, that we have driven the machines harder, making more gas with each machine, and using coke, which also tears them down somewhat.

Gas holder repairs are generally very extensive when necessary to be made. There are not very many repairs made to holders except very minor repairs, with the exception, of course, of painting, unless there is a serious ac- [fol. 547] cident to a holder. That is, a gas holder will go a long time without repairs, but when it is in condition to be repaired it is rather an extensive repair that we have to generally make.

We have a regular schedule for painting our holders so that we get around to each holder about — I think the tanks and lifts get it about once in three years, the guide frame when it is needed, sometimes more often and sometimes not quite so often. The time covered there depends largely on the condition of the holder. Sometimes they need it more often than others. We painted the 12th Street holder, we painted one of the Wythe Avenue holders, some of the Plymouth Street and Front Street holders in 1923. Those are all at the holder stations. I think the Metropolitan Works holders were painted during the year. There may have been others, but that is my best recollection now. The new holder at the Citizens Works has just gone into use, that was painted this year. I do not recollect that the

storage holders at the Citizens Works were painted during the year. The repairs to our generator house and boiler and exhauster house and things of that kind are made when necessary. I think that is the best I can answer. I think the repairs to those buildings are the same as the repairs to your house or my house, they come and go, sometimes we need them and sometimes we do not, and we do them when they are necessary.

Oftentimes during construction we make repairs more advantageously at that time than we could at some other time. We have not taken out any generators in any of the [fol. 548] plants since January 1st, 1920. The coal capacities I gave for the works related to the generator coal. The capacity for coke is just about half that of coal. Coke takes just about twice the space that coal does.

The operating figures pass through my hands. The normal recovery of tar is 16 per cent. of the oil used. The reports that were submitted to me during the year 1922, showed the amount of tar recovered at the Equity Works; the knowledge came to me in these reports. I do not know that the recovery during the year 1922, taking that as an example was below the normal. I have no recollection of the recovery of tar from the Equity Works during the year 1922.

Sheet 7, called the Front Street Station. I do not know the age of any of those holders or buildings, none of them have been constructed in the last few years, or since January 1, 1920. No equipment has been withdrawn from service since January 1, 1920.

There have been quite extensive alterations to the building marked "G" on the diagram sheet 8, since 1920. The building marked "Garage" was at one time a stable. It has since been converted into a garage and paint shop. That has been done since January 1, 1920. I don't think any property has been withdrawn or constructed from the premises shown on Plate 8 or Sheet 8 since January 1, 1920. I don't recollect any property being withdrawn from the premises shown on Sheet 9: the Rutledge Street Station, since January 1, 1920. None of the buildings or [fol. 549] the holders shown on Sheet, 10 the Skillman Street Stations, have been constructed since January 1st,

1920 or any of the property been withdrawn from those premises since that time, Sheet 11, Wythe Avenue Station since January 1st, 1920. The extension to the brick boiler house has been made this year—1923. That work was done by contract. My recollection is that Deeves Brothers had that contract.

Sheet 12, known as the Scholes Street Station—no buildings or holders on that property have been constructed since January 1st, 1920 nor have any buildings or holders been withdrawn since that time.

Sheet 13—the Belmont Avenue Station no buildings or holders, machinery equipment have been constructed or withdrawn since January 1st, 1920. And that is likewise true of Sheet 12. There have been no major withdrawals. I don't recall that anything has been withdrawn.

As to Sheet 14, the Union Holder and Citizens Branch, I don't think any buildings have been constructed there since January 1st, 1920. There was a Street Department office and storeroom on the corner of Cleveland Street and Atlantic Avenue and there was a holder just north of the No. 2 Holder withdrawn. That holder was of 100,000 cubic feet capacity. The steel work was taken down and the tank filled in. The- sold the steel as salvage. There was a wooden building on the corner, part was one-story and part two-stories. It was used as an office for the foreman of the Street Department and there was a storeroom for the [fol. 550] street department. They are located now in part of the building marked "K" and the cellar of part of the building marked, "A". We took that building down. I think of the withdrawals that is all. That was done about two years ago. I should say 1921 and 1922, part of 1921 and part of 1922, I should think.

None of the property shown on Sheet 15 has been constructed or installed since January 1, 1920. There were no removals.

On Sheet 16, none of that property has been constructed since January 1, 1920 and no withdrawals that I recollect.

The Wythe Avenue Holder Station, that is where we rebuilt an engine. We took an engine which we had been using and put a new steam cylinder in it, giving it more horsepower. We call that a betterment.

In Block 40 situated in the old office building known as 180 Remsen Street, that is a two and one-half story brownstone front building. The cellar is used for the storage of stationery and good many appliances, such as lamps; the collectors and indexers from the Brooklyn Branch make that their headquarters. The Brooklyn Branch is one of our commercial offices where the business of the company is transacted with the consumers, in a defined territory. The city is divided into sections for the convenience of the public in paying their bills, etc., I think it was more or less arbitrarily laid out at a later date than that. The Nassau Branch takes in another portion of our territory. I could not give you the boundaries of each branch. The Brooklyn Branch covers this downtown section generally. On the first floor of 180 Remsen Street is the exhibition [fol. 551] room, shows appliances of all kinds, and where we sell appliances to consumers; stoves, lamps, irons, etc. On the first floor two clerks have desks. They are the clerks who keep the records of the New Business Department, the department which has to do with the selling of appliances. The New Business Department is that department which handles these appliances. The people connected with the New Business Department do go out and solicit. These clerks who are in the office probably don't. The men who go out and solicit or endeavor to sell these appliances when they come home they come to the second floor of this building. On the first floor besides the lamps and the clerks and all the rest of the stoves and ranges and water heaters, gas logs—toasters, radiant fires, etc., are on that floor. There is a mezzanine in between the first and second floor. On account of the lack of room on the second floor the clerks are on this floor, the mezzanine. The building is very crowded. The three or four clerks of the New Business Department are on the mezzanine, there are seven clerks with desks there. There are also clerks who are selling, walking around that floor selling appliances. The three of them down on the first floor keep some records of the appliances. I do not know what they do besides keeping the records of the sales of appliances. I guess that keeps them busy. They keep the records of the sale of appliances too.

As to how many men down on the first floor are selling the appliances; of these, seven men, I think. That number [fol. 552] varies. I have seen three or four, probably, salesmen and saleswomen. There are appliances exhibited on the mezzanine floor; lamps up there, mostly. That extends only in the back of the building. On the top floor, there are about 50 clerks there, in the New Business Department and there is connected with the appliances.

Mr. Wiske is the head of that. He sometimes talks to me about them. He is not the purchasing agent. He is the head of the department, and naturally makes recommendations as to the kind of appliances he wants. We have a general purchasing agent. The purchasing agent buys the appliances, but Mr. Wiske makes some sort of recommendation to him, I imagine. To the best of my knowledge there are about 50 clerks up on the second floor. The keep the same records and keep other records of the department. All this is new business. By that I mean the sale of appliances. I should think 57 was about the number keeping the records of sales of appliances.

There was an entrance between the two buildings in the first floor and the second floor into the seven-story and basement building. The Ladies' rest room is for any lady that wishes to use it, I imagine. The first floor of the seven-story building adjoining this was occupied by the showrooms for displaying appliances. On the first floor of the building known as 176 Remsen Street is the Brooklyn Branch, not a thing, connected with the Brooklyn Branch in 180 except the collectors and indexers go over there. The Brooklyn Branch has cashiers and bookkeepers, the branch manager on the first floor. Besides these on the first floor [fol. 553] is the office of Mr. Wiske, the manager of the New Business Department. That is all that is on the first floor of this seven-story building. We have a place to exhibit our appliances there on that floor. That is in the vestibule and in the centre part of the Branch space. The space for the display of the appliances is limited. We have 100 bookkeepers in there. That is the reason the space for appliances is limited. We have the appliances over in 180, that is our main exhibition room. I do not know about the amount of square feet of floor space that is allotted there to the appliances in 176 or 180 Remsen

Street, first floor. The second floor is occupied by the shop distribution department, the superintendent and clerks and the treasurer's office. I think about a dozen in the treasurer's office. There are about thirty clerks in the shop distribution department.

[fol. 554] CHARLES C. ATWOOD

Brooklyn, New York, January 21, 1924.

Cross:

I rated the capacity of the plants on January 1, 1920 and also the capacity of each of the plants, as follows: On January 1, 1920, the total capacity of the plants was 84,000,000 cubic feet per day. The individual capacities were as follows: The Citizens' Works, 8,500,000; Fulton Works, 10,500,000; Nassau, 18,500,000; Williamsburg, 24,000,000; Equity, 2,500,000; Metropolitan, 20,000,000. A charging machine was installed att he Nassau Works, during the year 1923. And at that works we put in a concrete dock there for about three hundred feet. I think that is the distance, approximately. We increased the capacity of the coal shed from about 8,000 tons to 16,000 tons. The work of repairing the dock at the Nassau Works was done by our construction department, by contractors. * * * [fol. 555] I cannot remember whether I was consulted about the item pertaining to the dock at the Citizens Work, the repair of that dock and the construction of it. When the dock at the Citizens Works was built, it was necessary to remove some coal there while that work was in progress —in all of that work we put in a new coal pocket, at the Citizens Works, and in order to do that it was necessary to remove the coal that was there. That coal was used from that pile so that we did not do very much moving of the coal, except directly to the generator house. The coal was piled right out in the open before we built our bin. Then we took it from that pile and put it in the generator house. We had to move the coal in order to erect the dock, but we moved the coal in that way, by using it from that pile where [fol. 556] it was nearer the dock instead of from the other end. This was not our reserve. It was the coal that we ordinarily used. I don't think that we moved any large

quantity on that account. As to any expense that was incurred for moving the coal while that work was in progress there at the Citizens Works, I don't think I would be consulted regarding where that should be charged. That would be just the ordinary movement of coal. We would not call that a movement of coal, if we were just taking coal from our stock into our generator house. * * *

[fol. 557] The Construction Department does the work for the subsidiary companies and that is likewise true of the Distribution Department. Our men actually do the work of the construction of mains for the subsidiaries of the Brooklyn Union. The supervisors of the Brooklyn Union do it, but the workmen who actually do the work are on the payrolls of the subsidiary companies. That is, Mr. White supervises the construction of mains in the subsidiaries as well as for the Brooklyn Union. The subsidiary companies haven't any manufacturing plant; they buy all their gas from our company, and the mains are interlocked at various parts of the distribution system.

The gas is measured by the consumers' meters in the subsidiary companies, and the amount of gas consumed by them is used as a basis, and to that is added the amount of gas which is unaccountable for of the system. The sum of those two figures gives the total amount of gas sold to the subsidiaries. The gas delivered from the Brooklyn Union to the subsidiaries at the point of delivery is measured by the meters on the consumers' premises. The gas used by the subsidiaries themselves is measured by meter. We pointed up the front of the old brownstone building—filled up in the cracks or places where the brownstone has chipped off. We used a cement.

This Brooklyn Union buys the appliances for the subsidiary companies. The purchasing agent of the Brooklyn Union buys all of the appliances, not only for the Brooklyn [fol. 558] Union Company but for the subsidiaries as well. A certain amount of this gas that is made by these plants is also sold to the municipality. * * *

[fol. 559] Our company has been making what is known as 22-candle power gas, at one time in the past. It is my recollection that we made that for some years prior to 1920. During 1920 we did not make gas of a lower standard than that. We still maintained our standards right through

1920. There was one period back in there, in 1919 or 1920, when we did not get oil and did not comply with the provision. We did not make 22-candle power gas the whole year through. I don't remember how low we got down on the candle power of the gas. Those manufacturing reports came to me in those days the same as it is coming to me now. Those reports showed the candle power gas being made at that time. All that information comes to me. I do not recall times when we got down as low as eight and nine candle-power. I should think during the toluol extraction period they made a candle-power of about 14. That is as low as I recollect our company ever making gas, and I am not sure but what I am a little low in that figure. We were working under government instructions at that [fol. 560] time, and I think 14 was the low figure. That was during the year 1918. I don't remember how low we got on the candle-power during 1920, the time I claimed there was a scarcity of oil. I haven't any recollection how low the candle-power was during 1920. I know, however, it was lower than 22. Afterwards we again manufactured the 22-candle power gas. That is, after this period when we were able to get oil again. They made that increase I think in the latter part of 1920, but I am not very certain of the date. That is when we got back to our normal candle-power again. I recollect that the other case was then being tried, in 1920, and at that time we were claiming that we were unable to get the oil and consequently could not make the 22-candle-power gas. It was after the conclusion of the other case, the latter part of 1920, that we made the 22-candle-power gas. It may have been the early part of 1921, but it is my recollection that it was the latter part of 1920. There are men under the instruction of Mr. Uhlig, the Chief Chemist—under the supervision of Mr. Uhlig, who take tests of the gas at each of the works. We made one candle-power test every hour at each of the works. That is sent by Mr. Uhlig, the Chief Chemist, and then that report is sent to me.

The blue gas has a B. t. u. content of about 300. That does not depend somewhat upon the character of the coal we are using. I do not think there is very much change in that from time to time. I think that is a very constant figure. That would not make any difference if we were

using coke. We would still have about 300 B. t. u.'s. The [fol. 561] quality of the fuel has nothing to do with the B. t. u. content. We do not vary the B. t. u. content of the gas as we vary the fuel. I do not think there would be any change in that, with any reasonable changes in fuel. I can't imagine a fuel that would produce any very great change. You could use any kind of coke and still get the 300 B. t. u.'s per cubic foot. The blue water gas has about 50 per cent of hydrogen and 50 per cent of carbonic oxide, and a trifle of nitrogen. Carbonic acid gas is what makes up the difference between being just 50 per cent each and nearly 50 per cent each. It also has marsh gas in very trifling quantities, but not commercial quantities; no illuminating qualities. It burns with a blue flame; I imagine you could see it in the dark. It gives enough light to locate the flame. When oil is added, that adds more heating value and illuminating value. It adds ethylene. Ethylene and benzine are combined in what are generally known as illuminants; and it also adds marsh gas. The adding of the oil and the creation of these other gases tends to cut down the hyrogen and carbonic oxide; if you add more gases of course you do not still have the 50-50 of CO and hydrogen. The illuminating qualities come from those three factors. I never tried putting in one gallon of gas oil per thousand cubic feet of blue gas to ascertain how many B. t. u.'s are usually contained in a gallon of gas oil. We will figure if we get out in the neighborhood of a hundred thousand [fol. 562] B. t. u.'s per gallon of gas oil we are doing pretty well. That is, if we are making blue gas and we use a certain quantity of oil, say four and one-half gallons of oil, we will get a certain amount of heat value from each gallon of oil, say a hundred thousand B. t. u.'s, and we have a certain amount of heat value from our blue gas, and the combination of those two will give the resultant heating value. If we get a hundred thousand B. t. u.'s out of a gallon of gas oil it means that it is good gas oil and we are working it efficiently. I never have had the experience of using one gallon of oil per thousand. I base my statement on the fact that using four gallons of gas oil if we get four hundred thousand, dividing by four we get one hundred thousand. If you inject into the gas three gallons per thousand cubic feet, the heat content then would be about 546 B. t. u.'s.

[fol. 563] I think I can make that a little clearer if I tell you how we figure that efficiency of gas oil. First we estimate that there is a heating value of the blue gas of 300 B. t. u's per cubic foot. If we have a final heating value of our finished gas of 650 B. t. u's per cubic foot we would have 650 B. t. u's less 300 B. t. u's or 350 B. t. u's produced by the oil. If to make this 650 B. t. u's we had used 4.5 gallons of oil we would have then an efficiency per gallon of oil per thousand of a little over 80 B. t. u's per gallon of oil per thousand.

The Master: Well, as I listen to your explanation, what it lacks to my mind is data. You start with the B. t. u's per cubic foot in your blue gas and then you seem to have no data as to the B. t. u's in the gas oil.

The Witness: No, sir, because that depends on the way the machines are operated and the efficiency that we get from the machines and the quality of the oil.

Mr. Cummings: I thought he said it added 100,000 B. t. u.'s per gallon.

Mr. J. A. Dykman: May I ask him a question. I think you made a slip. You said 80 B. t. u.'s per thousand cubic feet. Don't you mean 80 B. t. u's per cubic foot?

The Witness: I mean 80 B. t. u.'s per foot per gallon of oil that is used per thousand feet of gas made. That is perhaps a hard figure for you to understand, is it? There are two ways of figuring this. One is to figure so many B. t. u.'s per gallon and the other is the way I have figured it out. I do not know my answer and justify my conclusion by fig- [fol. 564] uring this way and if I figure the other way I do not get some other conclusion. If it adds 100,000 B. t. u.'s that would be just 100 B. t. u.'s per foot but you have not got the equal quantities of oil gas and blue gas; you have a different quantity of oil gas and of blue gas and therefore you have to work with that relation. Perhaps if I explained the way we get the 100,000 answer it may help you. I start with the proposition that blue gas is known to have 300 B. t. u.'s per cubic foot. The number of B. t. u.'s per unit gallon varies. Then I add the gas oil, testing the resultant in combination with the blue gas until I have the required number of B. t. u.'s in the resultant, whatever it may be or whatever I am seeking to obtain. Then knowing that 300 per cubic foot of those B. t. u.'s came from the blue

gas I conclude that the balance came from the gas oil. We can estimate, like everything else, the future by the past and in that way we know how much to expect. Figuring the other way we have to figure that the gas oil is going to make a certain amount of gas which we figure at 65 feet per gallon. If you use 4½ gallons of oil you will have 292 feet of oil gas. In a thousand cubic feet of gas you are going to have oil gas and blue gas; you have 292 feet of oil gas and therefore you have the balance of 708 feet of blue gas; I have made 292 feet of oil gas and I have 708 feet of blue gas. Now each foot of that blue gas has 300 B. t. u.'s to it so that you have made from the heating value of that blue gas 212,000 B. t. u.'s of blue gas. In a thousand feet of 650 B. t. u.'s per foot you have 650,000 B. t. u.'s. The heat value supplied by the oil is the difference between these two or 437,000 and if you used 4½ gallons of oil to do that you would divide 4½ into 437,000 or practically 100,000 B. t. u.'s per gallon. A gallon of gas oil makes about 65 feet based on numerous tests in our laboratory [fol. 565] ordered by me and reported back to me. One gallon of gas oil made between 63 and 67 cubic feet depending on the oil. The last test was not a very long time ago. Sometime last year, I think, and they have been made frequently for me. We do not test every barge to find out how many cubic feet that particular gas oil will make. I do not think it is generally accepted by gas manufacturers that a gallon of gas oil makes 80 feet. I am positive that in any figures that I ever made or heard of it was not 80 feet. I do not remember any other tests except those I have made at our own works. I probably have seen other figures but I do not remember them. I don't know the name of any so-called destructive gases in blue water gas. There are gases we call inerts, nitrogen and carbon dioxidean. They dilute the gas but I never thought of them as consuming the gases gotten from gas oil. I don't think they do. Of course if you dilute anything you have to overcome the effect of that dilution. Inert is a very good name for it but it does not destroy the gas. I have never made any tests to advise myself as to the action of those two particular gases upon the gases that are produced by the oil. It was not necessary to make any tests on anything like that. I think my study of gas for a good many years has helped me to

know. I think my knowledge was rather negative than positive on that subject. I have never seen any tests to indicate it the other way. I mean it is data I have assumed as a matter of education in my profession. Assuming 22 candle power gas is made for a couple of hours and then 650 B. t. u. gas is made for a couple of hours, I don't think I can answer a question as to the difference in method because I do not know what the heating value would be of the 22 candle power gas. We might be producing the 650 B. t. u's [fol. 566] with the 22 candle power. It is the same process exactly. But we might not. We would always use oil and always the same kind of generator fuel and we would make them in the same apparatus. 650 B. t. u. gas might or might not have 22 candle power illuminating property and the converse is true that 22 candle power gas might or might not have 650 B. t. u.'s. Assuming we are making 22 candle power gas regardless of its B. t. u. content and we desired to be sure that the gas will have 650 B. t. u.'s, regardless of its illuminating properties, we would use the same ingredients, the oil might or might not be more or less. I cannot tell what change, if any, we would make in the process of manufacture for the reason that I stated before, in making gas in an attempt to get the best efficiency in regard to heating value we would carry higher heats in the carburetor and superheater, carry them hotter for the higher temperature, and probably carry our fire temperatures higher in an attempt to get efficiency from the heating value standpoint than we would from a candle power standpoint. Regardless of its illuminating property the heats vary considerably with the quality of oil you are using. About 1,350 degrees is an average temperature for the heating value standard of 650 B. t. u.'s and it would be a little lower than that, probably, for the 22 candle power, probably within 100 degrees. It is not hard to distinguish between 22 candle power gas and 650 B. t. u. gas by tests. I would like to change that. Sometimes it is and sometimes it is not. The heating power may be the same or it may be different. The heating power of 22 candle power gas ranges from 600 to 660 or 670. I have seen 22 candle power gas average for a few days 650 and a few days more 610. You can always strike an average if you cover a long enough period. We have not made 650. I have seen 22 candle

power gas contain 650 B. t. u's on the same two tests. It is [fol. 567] not a fact that 650 B. t. u. gas is just another name for 22 candle power gas. The average content of 22 candle power gas is not in my experience very near 650 B. t. u's. Some days it would average 610 and the next pair of days it would aveage 650. I have seen it up to 660, I think. I would not agree with the statement that 650 B. t. u. gas is 22 candle power gas under another name. The only difference in the method of operation when we are making 650 B. t. u. gas and when we are making 22 candle power gas is a variation in heats. The heats are changed by a change in the plant and the method of operation, in so far as the run and blow are concerned. For the heat standard you have a longer blow. It is very difficult to tell how much longer you blow when you are making B. t. u. gas than when you are making candle power because materials change and fuel changes and that would affect the heats and as a general proposition to carry the higher heats requires a longer blow. I did not tell you a minute ago that it did not matter what the character of the coal or coke was in regard to the heats. I did make the statement in regard to the blue gas. The increase in temperature is for the purpose of the effect upon the gas oil which takes place in the carburetor and superheater and we generally carry the fire temperatures in the generator a little higher too. The blow is made in the generator and the carburetor. The character of the coal in the generator has something to do with the length of the blow. The temperatures in the carburetor and superheater depend somewhat upon the character of the coal used and the efficiency gotten from oil usually depends upon the character of the coal. I do not think it would make very much difference what kind of coal you used in order to get [fol. 568] the 300 B. t. u's in the water gas. A variation in the fuel would vary the blow. In the whole process of gas making it makes a difference what kind of coal you are using since the cost of the finished product would depend upon the character of the coal but not the quality. We would meet it by using more or less steam or longer or shorter blows, longer or shorter runs. I do not think you can make any definite statement to the effect that if the quality of the coal was extra high you would not need as long a blow as you would if the quality was below standard, but you

would operate to get the best condition you could out of the fuel you are getting. We have a great many variables. We have a blow, we have a run, we have part up-steam and part up-run and part down-run and all of those things are varied to suit the fuel and the oil conditions; and the amount of steam used is varied. 20 candle power gas may have higher or lower B. t. u's. I do not suppose I know what the average of 20 candle power gas would be. I have not stated that I do not know the average of 22 candle power gas. I have stated that by averaging a few days you will get one value and by averaging some other period you will get another value. Averaged over a year I think you would get around probably 630 or 640. I guess 630 is probably nearer to it than 640. I am talking now about the gas made at the works. I think 22 candle power gas over a period of a year would average about 630 B. t. u. content; next year it might be something different, perhaps. The variation is due to the fact that the ethylene and benzine make very large additions to the candle power. They add very largely to the candle power and also the heating value. The variation of the amount of the heating value of these gases depends on the relation of benzine and ethylene. If you break up the oil into benzine you will get a higher candle power and if you break it up into ethylene you will [fol. 569] get a lower candle power so it is the relation of the several elements which form the mixture. It is very difficult to govern the breaking up process in regard to candle power. By carrying a little higher heats we can hold a steadier heating value. Further than that, in our heating value basis we have our original 300 B. t. u.'s from our blue gas, which is fixed. We have also our 1,000 B. t. u.'s from the marsh gas, which is also fixed. It requires some greater degree of attention or technique to hold our production at 22 candle power than it would to hold it at 650 B. t. u.'s. We could never quite determine where that additional care and attention or technique come in the process of manufacture. Sometimes we would get good results with the same amount of oil and then the next day we would not do so well. Of course it is a matter of heats in the carburetor and superheater. It is a matter of constant attention to the temperature and temperatures are dependent on the condition of the fire in the generator so that we

have to have constant attention to the fire and the heats and that depends upon the operator too. It is a somewhat less exacting task to hold gas at a standard of 650 B. t. u.'s than it would be at 22 candle power and that would be true where you are operating machines with automatic controls. Somebody has to control the automatics and do the timing. It is not intricate to set the timing but it is intricate to decide what timing to set. We change the timing; if our fuel changes we have to alter those. I cannot tell how often you change that. There is no definite time to change it. We have to keep changing and regulating those automatic controls. I cannot tell you how many B. t. u.'s there are in 20 candle power or 10 candle power any more than I can in regard to 22 candle power. I should say there would not be [fol. 570] 650. I have not made any tests of low candle power to determine the B. t. u. content. I cannot tell the B. t. u. content of the gas made in 1920. I cannot answer the question of how many B. t. u.'s 14 candle power would contain except that during the toluol extraction period, as I remember the figures, we cut the candle power down 50 per cent or 60 per cent and our heating value during that time was only reduced 5 or 6 per cent. I do not think that is the usual way it goes. I am simply telling you what my recollection is as I have outlined, that the candle power was cut more than in half and our heating value was only reduced five or six percent. I do not think that cutting the candle power in half, taking an 11 candle power, we would get 650 B. t. u.'s. I would not like to say what B. t. u. content would be gotten out of 11 candle power gas. On an average I think there would be a drop of 30 B. t. u.'s out of 650 or about 5 percent. That is with 11 candle power gas I would presume the B. t. u.'s would be about 620 and there would be a very great variation. I have not any idea about the variations in 11 candle power gas. I did not say 22 candle power gas would average about 630. I said about 620 and that during the time we were extracting toluol from the gas, that was our experience. I said for a year it would be 630 but for the next year it might be something different. When asked what would be the B. t. u. content of 11 candle power gas for a period of a year I said 620 with variations. It is not my opinion that even though you reduce the candle power in half the effect of it is to only re-

duce the B. t. u. content with variations to 610 B. t. u.'s. We started off on 650 B. t. u.'s in the first question you asked me about 11 candle power gas and I said that when we reduced the candle power 40 percent we reduced our B. t. u.'s 6 percent and 6 per cent of 650 is in the neighborhood of 30 odd B. t. u.'s.

[fol. 571] Our experience was that if the illuminating property was reduced 40% you might reasonably anticipate that the selling value would not be reduced much more than 6%. I think it a fair statement that gas of 11 candle power would average about 620 B. T. U.'s with variations. I have testified in answer to your question that I never made an experiment or test to ascertain what B. T. U. content there was in 11 candle power gas. I do not like to express an opinion on the B. T. U. content of 14 candle power gas. I cannot make a figure on 14 any better than I can on 11 and I think probably 14 would be 620 or 11 might be 620. The figures vary so that I don't think I can separate it that way. 14 candle power gas might have a higher average B. T. U. content than 11 candle power and it might not. I don't mean that I cannot foretell the fact in that regard at the time of manufacturing the gas. I can only ascertain it by test after the gas is manufactured at a given candle power standard. I would have to use more oil to make 14 candle power gas than to manufacture 11 candle power gas. It might add more B. T. U.'s but whether it would be more or less I don't know. I think as a general proposition 14 candle power gas would have more B. T. U.'s than 10 candle power. The Marsh gas is not what gives the illuminating and also the heating power. It gives some heating quality and some illuminating quality. It is a hydrocarbon CH_4. Methane is the real name for it. Three gallons of oil to one thousand cubic feet of finished gas will yield from 16.5 to 18.5 candle power, make it 16 to 19 because those figures are not very definite and probably 540 B. T. U.'s. Adding another gallon you would probably get somewhere around 625 B. T. U.'s; from the four gallons you would probably get from 22 to 25 candle power.

[fol. 572] Those same appliances could be used to burn gas efficiently at 650 b. t. u.'s. I doubt if those same appliances could be used without further adjustment, with gas at 680 b. t. u.'s. I did not test at 680. I tested at

600 and 540—I think it was actually 540. It was between 535 and 550. When you get down as low as 540 you will find that the appliances will not work efficiently, as they had been adjusted on the district. The range of appliances was somewhere from 600, perhaps 610 up to perhaps 650 or 660, without adjustment. From 600 to 650 would probably be the range that they could be used on. I doubt very much whether they could be used efficiently at 580. * * *.

[fol. 573] If a flame hits a receptacle on the stove, that immediately gives off poisonous carbon monoxide. As to how long a person would have to stay in the kitchen before they would be overcome by that would depend on the person and the kind of kitchen they have; the cubical content of the kitchen and the amount of ventilation. It is very poisonous. We have had, unfortunately, many asphyxiations, where people turn on the gas and it hits the receptacle and gives off this carbon monoxide, but whether it is caused by that or by something else, I don't know. I don't know what else would cause it. I don't recollect anybody having been found dead in the kitchen with the gas flame hitting a receptacle. I have seen a gas flame around the bottom of a teakettle on a stove hit that receptacle, and that flame has given off this poisonous gas. In a room ten feet square, I could not make an estimate as to how long the housewife could remain there without dropping from this gas, from these poisonous fumes. I never made any tests as to the poisoning qualities of this carbon monoxide. That is not necessary. We know that it does, and we know that even the ordinary gas knocks people out when they inhale that. Anyone knows that CO is a poisonous gas. I have heard of a great many cases where persons in a closed bathroom, for instance, have been operating a water-heater and they have been found dead in that bathroom with the water-heater going and the flame up high enough to hit the coils. I attribute that to the giving off of this carbon monoxide. I don't think a [fol. 574] certain amount of it would be caused by the consumption of oxygen, because a person would realize when they were getting smothered, but carbon monoxide is an odorless gas and you don't know when you are get-

ting that. You light one of these boilers enclosed in a bathroom, and that consumes air, just the same as three or four, for that matter. Now, after you take the oxygen out of that room, that would of course affect this person that is in the bathroom, but a person would realize it when he was being smothered, but he would not realize it when inhaling c. o. Carbon monoxide is explosive and inflammable. This poisonous substance, that comes up through the flame, doesn't pass off; there are two conditions always there. One of them is where we have a flame which is known as a floating flame. A flame leaves a gas burner and there is a little space there. The gas escapes there and the c. o. comes away from that point which is just above the outlet from the round burner, and the gas is constantly coming out of that burner. That doesn't always burn as fast as it comes out. Sometimes we have a floating flame effect, where the gas does not burn down to the burner. There is a certain amount of c. o. formed there, but the majority of c. o. is formed from the fact that flame impinges on the receptacle or the water coil, in a water heater, and as soon as the flame impinges on a receptacle or a cold water coil, you retard the combustion. When you retard combustion you make incomplete combustion, and when you get incomplete combustion you get c. o., which is poisonous. Take [fol. 575] one of these enclosed coils or water heaters; when the flame hits one of those coils it is apt to give off this carbon monoxide. It is inside of this enclosure, and this carbon monoxide is explosive and inflammable. It would depend entirely upon the quality of it and the amount of air that you had in the room. You could get an explosion where the gas is constantly burning, all within this enclosure. As soon as you retard this combustion that I spoke of, you reduce your temperature of the flame, and the flame does not go back to the source of the flame. Then the carbon monoxide leaves the flame and it goes right up and out, just like the smoke goes up a chimney. Smoke does not stay in the room, it goes up the chimney. It has an opening at the bottom and the top. You have to have an opening to get the match in, but there are also other openings. They all have openings at the top to let

the products of combustion out. If you have complete combustion, you have no c. o. coming out, but if you have incomplete combustion, then you do have c. o. coming out. Take the ordinary coil that is attached to a water heater—there are openings at the top of that. If they were all connected to flues, that would be all right, but when we have to take those and put them in the bathroom or in small kichenettes and the like where they discharge right into the room, then that is all changed. The gas is leaving the container above the point of flame, because you have stopped the flame, reduced the flame right at that point. All our products of combustion go out the top. Our c. o. [fol. 576] is one of the products of combustion and therefore it all goes out the top. If it was formed down on the very first coil, there would not be four other coils with gas burning there. There is no gas around those top coils—it is a spiral. The number of spirals or coils there depends on the size of the heater. I think the ordinary heater has perhaps a dozen, and that winds around. The flame, when properly adjusted, does not touch those spirals. Now, if you change the heating power of your gas so that the flame does touch those spirals, that is where you get into trouble. Then the gas that is inflammable gets out of there without being burned. Carbon monoxide cannot occur with the gas we are now furnishing; not with the burners as they are. We get no carbon monoxide now from the gas we are now furnishing with those appliances, because as we adjust the appliances, the flame does not touch the utensils. That constitutes the readjustment. If we go up in our heating value we will get a longer flame and then we will get the flame impinging on the utensils and we will get the formation of carbon monoxide or lamp black. We have so adjusted them now that in no event would the flame hit one of those receptacles or impinge on the receptacles when it is turned on full force. When it is turned on only half, it would not be so high. If the burner is properly designed, you get the same ratio of gas to air. It doesn't make any difference. Of course, if you have a flame only one-sixteenth of an inch—like a pilot light, you would not get the same efficiency out of that, because it [fol. 577] is not possible to adjust a burner within all that

range, but with ordinary usage, where you have it half or three-quarters or full on—there, if you have a well-designed burner, you will get the same ratio of air to gas and, therefore, the same efficiency. That is the same complete combustion of the gas you allow to come through. As the gas goes in it draws in the primary air, and due to the properly designed burner, as you do not get quite so much gas, you also do not get quite so much air.

4.5 gallons of gas oil will make 670 B. t. u.'s; it will make candle-power from 24 to 27. It is generally conceded by gas engineers that the first two gallons of gas oil injected into the mixed gas or blue water gas does not create any candle-power to any extent, but I have never seen it tried myself, and that it is only after you get below three gallons that the illuminating power or quality begins to assert itself—it begins to shine; but, as I say, I never have tried it myself. Applying that, the heat content would rise with the injection of one gallon or two gallons. We are using between 3.50 and 3.55 gas oil in the manufacture of gas that we are delivering now. That was true on June 1, 1923, but not from October, 1922, to June, 1923. We did not drop as low as that at first. When we first went to the 600 B. t. u.'s we stayed at 600 until the burners were adjusted, which was in May, on May 1st. Then we reduced the heating value from 600 to 590, and then on the 15th of May re-[fol. 578] duced it from 590 to 580. At about that time, the middle of May, we reduced it to 3.5 gallons of oil. That gave us a gas of 580 B. t. u.'s at the works. The candle power has not been determined. The order of the Public Service Commission permitted us to make gas at an average of 537, and we did not reduce our standard to that average which was permitted, because we wanted to adjust our burners before we did that. We have not reduced it, even though we have adjusted our burners. Our burners now are adjusted to take care of or to burn efficiently gas of 537 B. t. u.'s, but we have not reduced it from 584 to 600 at the works, to burn 537 out on the district.

Mr. J. A. Dykman: May I direct the Master's attention right here, while it is fresh in our minds to the fact that the temporary restraining order or preliminary injunction provides that the standard shall be maintained as is, pend-

ing the case. If I may ask the witness question here, at the time that this statute was passed, or on June 1, 1923, did you have in contemplation any further change?

The Witness: Yes.

Mr. J. A. Dykman: Of B. t. u. content?

The Witness: Yes.

At the time that this statute was passed, or on June 1, 1923, we had in contemplation further change of B. t. u. [fol. 579] content. A gas heavy in hydrocarbons is not so stable as one that has less hydrocarbons. I don't know which one of the two gases has more hydrocarbons in it, the 22 candle power or the B. t. u. gas—candle power gas or B. t. u. gas. A 650 B. t. u. would have more than 600 or 585. The more B. t. u.'s in the gas the more hydrocarbons in the gas. We determine the amount of hydrocarbons in a gas by analysis. That is, I have tested gas with a candle power of 22 or 23 candles, at the works, and found about 11 or 12 per cent of the heavy hydrocarbons; and I have tested a gas of 580 B. t. u.'s and found about 10 to 11,—sometimes lower than that 9 per cent of heavy hydrocarbons. If you are making the same kind of gas you will always get the same analysis. If you were making 650 B. t. u gas you [fol. 580] would get the same kind of gas. If it is made up of the same constituents you would naturally get the same analysis. You would get approximately the same constituents each time—that is, the same percentages. If you make an analysis of 650 B. t. u. gas today you would find a certain percentage of these various gases in it, and then if you make it a year from now your percentage would be approximately the same. I don't think that would vary a great deal depending on the quality of the oil or coal we were using. The reason the gas varies from the works to the point of consumption is because of the dropping out of these heavy hydrocarbons. They are condensed out of the gas by a change in temperature and by friction in the mains. With the meters in service that friction takes place all the way through, of course. That is, if it is an extremely cold day or a cold period or cold winter, the hydrocarbons drop out to a far greater extent than they would in the summer time, and they would be apt to drop out more last winter than this winter, because of variations in temperature. As these hydrocarbons drop out from the gas they are gathered

in the drips in the mains, and also in the holders. They are liquefied when they drop out.

When making 22 candle-power gas the average B. t. u. content is 630, sometimes. Our B. t. u. content now is 580, at the works, and that would be, of course, less on the [fol. 581] system. I do not know how much it drops within a mile as we have not any testing stations within a mile. Our testing stations are not at the works. We have one at our laboratory on St. James Place, we have one out at Myrtle Avenue and Himrod Street, and one at the Newtown office near the Newtown holder. Those three are the only ones we have. I do not know how the gas travels. The only way that I can arrive at it is by telling the nearest point to the works, and then assume that it goes directly to those points. I can give the approximate distances from the works to those stations. I should think to the Myrtle Avenue and Himrod Street it was two miles and a half or three miles, from the nearest works, which would be either Williamsburg or Nassau. I am not quite certain which would be nearer. And to the St. James Place—well, I should think that was about two miles, probably, from the same works, from Nassau. The Newtown Station is about four and a half or five miles from those two works. The hydrocarbons will drop out in the mains and collect in the drip. I don't think I remember what my tests show at those testing stations. I do not know that they show that more of the B. t. u. content drops out or the heavy hydrocarbons drop out in 650 B. t. u. gas than in 580 B. t. u. gas; we have not made 650. My tests that are made at these various works or at these various testing stations of the gas analysis are sent to me, but not the heat value. I make a test there as to the B. t. u. content, too, and those reports come to me too. It was not the custom of the company to test their gas when they were making the 22-candle power [fol. 582] gas at points at or near the City testing stations. We did not make our candle power test at the three places I have mentioned, just at the works. We did not make any regular tests out in the territory. We knew what candle-power we were making at the works and we knew what candle-power to expect when we had a drop. We maintain regular testing places for our B. t. u., in accordance with the ruling of the Public Service Commission, and those are the three that I have mentioned.

Whether in making 580 b. t. u. gas there is less recovery of drip oil than there was when we were making the 22 candle-power gas is a very hard thing to determine on account of the fact that we collect drip oil from the holders and from the mains, and unless you are operating over a long period on one standard it is very difficult to decide that, because we take the drip oil from the holders sometimes and sometimes we leave it on longer, depending on circumstances. I cannot tell whether our record shows that we are recovering less drip oil now when we are making 580 b. t. u. gas than we were when we were making 22 candle-power gas. I think there is less. In other words, the heavy hydrocarbons drop out more readily in the 22 candle-power gas than they do in the 580 b. t. u. gas. If we experience a period of extremely cold weather the heavy hydrocarbons drop out to a far greater extent than they do when it is not so cold; so that depends somewhat upon the variation in the temperature. It also depends upon the pressure, within limits. I mean by that a very high pres- [fol. 583] sure will condense out more of the hydro-carbons than a low pressure will. All of our gas does not go out at high pressure, not known as high pressure in the gas business. We call it a medium pressure main. A high pressure main is a thirty or forty-pound main, which we do not have. I am not certain whether we get more from high pressure mains than in our distribution system. In one place, with the smaller pipes, we get more friction, and in the other place we get a higher pressure. I guess the balance is pretty near the same.

In the distribution system, in accordance with the Public Service orders we carry from two to four inches. It does not vary in any one spot. We may have four inches in one spot and two inches in another, but the two inches are always at two, and the four inches will always stay four. As a matter of fact, we have very few places where we are as low as two. I do not think of any now. I think between three and four would be a better statement as to the pressures we carry. The high pressure system, our loops, is carried from three to six pounds. That means three pounds during one part of the day and six pounds during the peak load when we are pumping gas hard. The

pressure in the transmission system does vary, dependent on the load that is coming off and the condition of our holders, whether the holders are up or down. The pressure at the work is controlled so as to give us the pressure we require at our distant points on our system. The pressure at the works or holders stations varies. In our trans- [fol. 584] mission system it varies from three to six pounds, and on our distribution system I think that six inches is the highest we carry any place. These heavy hydrocarbons would not drop out to a far greater extent where you are carrying six inches than they would where you are carrying three pounds. That might mean the less pressure the less hydrocarbons drop out, because we know when we get up into very high pressures, we have a very considerable drop; but whether there is very much drop between six inches and three pounds I am not prepared to state. Our pressure is higher in our transmission system. The theory of the thing is that there ought to be a greater drop in our transmission system, where we are maintaining a higher pressure.

I cannot divide friction affecting this falling out of hydrocarbons between the amount due to temperature and the amount due to friction, nor the amount due to pressure. Those three things all produce condensation, and to what extent each one enters into it I do not know. We will take 20 degrees above zero, and then take 10 degrees above zero—the drop is about one per cent. for every 20 degrees. That is not the result of some tests that I have made. One per cent. to 20 degrees. I am basing it on the fact that dry gas expands 1 per cent, for every five degrees, and wet gas expends 1 per cent. for every four degrees, those are approximate figures. If you work that out, you will come to a condensation of about 1 per cent. for every 20 degrees. Speaking of pressure, if the barometric pressure [fol. 585] affects the dropping out of the hydrocarbons, as well as the pressure at the works does it is very slight. Of those three causes for condensation, temperature is the most potent, and next, friction—pressure being the least, in our system. That is the way it would strike me. Our mains have a three foot cover buried beneath the surface. We have this to give an idea of the extent to which the

temperature varies down there as compared with the variations at the surface of the street, the temperature of the water, which means are about the same depths as ours, the temperature of the water running from the faucet will average the same, about, during the year, as the temperature of the air, the minimum not being so low and the maximum not so high. We have a record of that. That would seem to me to be a fair standard of comparison. Water varies in temperature before it enters the mains. That is, in the winter time the water as it leaves the reservoir is very much colder than it is in the summer time, but my thought is that the water in travelling long distances, as it does with us from the Catskills, would assume the temperature of the ground, and in that way the temperature of the water would indicate very closely the temperature of the ground. I suppose the pipes and the gas mains are about the same distance below the surface, approximately. Of course, that gas is subjected to a different temperature in our holders. Our holders today, the temperature of that gas is very low in the holders, probably, whereas in the summer the gas will be warm, quite the reverse of the condition in the ground. The barometric pressure affects the volume of the gas under which it is [fol. 586] measured. In measuring gas the volume of the gas is affected by the barometric pressure at the time it is manufactured. If you change the volume, of course, you change the b. t. u.'s in that amount of gas, the b. t. u.'s per cubic foot. The barometric pressure affects the b. t. u. content slightly. When you reduce the volume of the gas due to an increase in the barometric pressure, you naturally increase the b. t. u.'s per cubic foot in that gas, because you have the same number of b. t. u.'s in a smaller quantity of gas. Therefore it does affect the b. t. u.'s. In a cubic foot you will have crowded more gas, and therefore more b. t. u.'s. If you analyze that gas you would find more hydro-carbons in it, per cubic foot. I do not think there is range enough in our barometric pressure to affect in this climate. So that if the barometric pressure drops one inch, you get a loss, really, of 22 b. t. u.'s per cubic foot. It is not unusual to have a drop of one inch in the barometric pressure here. If we have a drop of one inch

from an average of 30 down to 29, which is not unusual, or 30½ to 29½, we get a change in the volume of gas; and then, if we crowded more gas in or less gas, we have the same number of b. t. u.'s and would have more or less gas, we have the same number of b. t. u.'s, but would have more or less b. t. u.'s per cubic foot, and that is the reason we correct our gas to a standard, so that we can compare one with another. The greater the density as caused by an increased barometric pressure, the greater the number of thermal units in a given space, say a cubic foot. The [fol. 587] amount of b. t. u.'s that would be necessary at the plant vary in accordance with the temperature of the atmosphere and also in accordance with the barometric pressure—the two things. And also that depends too on the theory that we would probably get more condensation if we had more pressure, but I do not think in our system there is very much difference due to that. With a constant make we lose stock in our holders all day long; we lose stock up until 10 or 12 o'clock at night. Our holders keep going down all during that period. Then from then on until morning we pick up that stock. Our peak load, our maximum hour of the year comes in October, at noon on some Sunday along in October, generally. That is usually our peak hour. Our peak load is in a day in the dead winter months of December or January. Our greatest hourly send-out in proportion to the rest of the day comes at this time of year between five and seven o'clock. At that time, between five and seven, and on these days of peak consumption, we maintain a greater pressure in our transmission system and also at the works. That might or might not affect the dropping out of those hydrocarbons, the variation in that pressure. That is the consumption per mile of main. I think that is a very reasonable assumption. We have no way of proving that definitely, because we do not know just how much gas is going through any one main. The theory is that the greater the activity the greater loss by friction, and the greater dropping out of these hydro-carbons is due to fric- [fol. 588] tion. During a time of peak consumption you would have a greater loss by friction as well as a greater loss by pressure. So much is dependent on temperatures;

as soon as we get a cold day like this our send-out will go up enormously between yesterday and to-day, so that our peak would be a great deal higher to-night than it was last night. The maximum hour would be in October. I think I better change that, because I do not know whether it is last year or this year. The peak hour may be in the cold months of January or December. I have not looked up that figure in several years; but we always used to run—it was not a very unusual thing to have a maximum hour in the time of the year before people have lighted their furnaces, and if we get a cold day and every-one cooking with their summer stoves, the result is that we have a maximum hour in October, whereas we would think the maximum hour would be in the winter. That may have changed in the last few years. I have not seen the figures on that for some years. The quantity of b. t. u.'s in the gas depends to some extent upon the efficiency of the operator of your machine, with a given amount of materials.

The combination of the carburetor and the superheater affect the stability of the gas. We work them in conjunction with each other. That is what the superheater was originally designed for, and of course does it to some extent. In making the same kind of gas, that is, 650 b. t. u. gas, one operator would probably fix the gas into a more stable gas than another operator. The dropping out of [fol. 589] these hydrocarbons is affected by the ground temperature, and I can imagine that the ground temperature might be affected by soil condition. I believe you would get more dropping out in a marshy or particularly cold section probably, in the winter than you would in a dry place, and the reverse might be true in the summer. Our frost line here runs from nothing to, I suppose, an average of about a foot and a half, so that most mains are laid below the frost line. Our mains system has a three foot cover right through, all over. We pass it over some parts where construction work is going on, subways and that kind of work. I am talking about the general system. We have unusual conditions such as you speak of. We do not get it over the canal; we go around it, over bridges or anything of that kind. We don't by-pass it along over the bridge. In the Brooklyn territory there may be some cases that I do not think of now. I do know of places

there where it is not covered with three feet. I know of places during subway construction where the pipe has to be exposed, and that affects the dropping out of those hydrocarbons. It is a thing we are up against and cannot prevent as long as the City progresses. The location of the meters affects the loss in b. t. u.'s. If the gas is cooled we get a loss in heating value, and if the meter is in a cold place, we get a loss due to that fact. I really don't think we get very much loss in the meter itself, because there is a very small amount of gas there, but you take in the service and the meter in conjunction with it, if it is all very cold, we probably would get a little more loss. It also depends [fol. 590] upon the depth of the service as well as the mains. Our services come right off the mains, about three feet over them.

This dropping out of the hydro-carbons and also the dropping out of the b. t. u.'s varies in accordance with the distance from the works to the consumer. Due to just the causes we have been talking about, the further it goes the more friction it comes up against, and the longer it is in contact with the cold ground. I have not made any experiments to show the percentage of loss in one mile and two miles and five miles. I can tell you the loss we have over a good long distance, such as five miles, as a result of some tests that I have made. I tested that at the station. I made that test from Gas manufactured by us. That is tested out there every day, and the gas that we are now making is tested, and we are now making gas around 580 at the works.

The subsidiaries buy the gas from our company. It is twelve to fifteen miles from the works to the most distant consumer of the subsidiary. The Woodhaven Company is the most distant subsidiary. That Company has the territory in the most distant part of our territory. The greatest distance is twelve to fifteen miles, approximately. I should say ten miles would be the nearest point of their territory to the works. The drop when we are getting as far as Newtown, is about 20 b. t. u.'s, and that distance is five miles. The drop in ten miles is something greater. I am not prepared to say how much greater. We did not make any tests of the gas at the different consumers' houses in [fol. 591] order to find out the drop in the b. t. u.'s. We made tests at the three testing stations. Our nearest test-

ing station was approximately two miles from the works. We run from 580 to 585 at that place. There is about 18, and two and a half miles, and about 25 miles. Our other testing station is Myrtle Avenue and Himrod Street. That would be about three and a half miles, I should think. That would run about the same as the laboratory, about 18 b. t. u.'s drop. Of course, as I said before, this gas has not come directly from the works to get to that one point, it may have traveled or had to go farther before it gets to that point. But it surely has been that much, and may be more. When we are testing the gas we know that it is five miles to Newtown. It may go farther than that getting there. We can not follow each piece. * * *

[fol. 592] A soft flame is a flame that is more or less unstable, and a longer flame—a sort of flickery flame, with possibly a tinge of yellow to it. A hard flame is a sharper flame, more definitely outlined; that is, where we have a rich gas with the same adjustment that we have for a lean gas, we will have a longer flame and the flame will tend to be unstable. "Rich" and "lean" refer to the hydrocarbons; to heat value. The relation of air and gas was adjusted by the operation of the shutter, the air shutter, and also by adjusting the size of the gas orifice, reaming it out if necessary. We did in certain cases and in other cases we did not ream it out. In other cases we had to ream in order to provide for the gas which we expected to supply, of 537 to 550. We wanted to get enough gas of that kind into the burner to make the proper mixture. So that we adjusted the burners—to use Mr. Cummings' term—to a soft flame at 600, with the expectation and the knowledge that as the heating value was lowered that flame would gradually sharpen—strike a medium which would be the best we could do. We could not do them all at once. We could not do the whole task in one night; if we could we might have done it differently. Having adjusted the soft flame at 600, I think its highest efficiency would be somewhere around 560. That is my impression of the matter. I should think between 550 and 560. Perhaps 560 is a little bit too close. We had to get a flame which would stand ad-

[fol. 593] justment down when we got down to the 550, or which would burn gas when we got down to the 537 or 550 to comply with the Public Service Commission's order. We

adjusted it to a soft flame, and as the flame would go down, it became harder. We realized that as we went nearer to the 537 all the time, when we got down to that point our burners would be adjusted about right. In other words, a burner adjusted for your 537 will produce a soft flame with gas containing 600 b. t. u.'s. As the b. t. u. content of the gas is lowered from 600, there will be a more efficient point there. I do not think the efficiency changes a great deal between 600 and 550. As to whether the gas would burn just as efficiently at 600 as at 550, I do not think there is a great deal of difference, as the burners are adjusted now. * * *

[fol. 594] January 23, 1924.

CHARLES C. ATWOOD

Cross:

The percentage of cases where it was necessary to ream out the spud on the appliances was in the neighborhood of 50 per cent—a reamer was put through the burners in the neighborhood of 50 per cent of the total. * * *

[fol. 595] In order to change the size of the orifice, one way of doing it would be to just insert another spud in the appliance, if you could get a spud to fit every appliance you want. There are different standards used, which would make it necessary to carry a large number of spuds. It is much simpler to ream out the spuds. * * *

[fol. 596] Reaming this out allows the consumer to have a little more of the gas. With a larger hole it will pass more gas. In that way you get the work done in a little bit quicker time than you did before. The definition of a heat unit is the amount of heat required to raise the tem-

[fol. 597] perature of water one degree, one pound of water one degree.

To bring a quart of water to a boiling point by the use of 22 candle power gas averaging 630 b. t. u.'s, and by the use of 580 b. t. u. gas, assuming that this burner was adjusted to consume his 580 efficiently and adjusted to consume his 630 efficiently, in that case the heating value of the air and gas mixture leaving the appliance in each case would be the same. I have testified that it would be

about 92 b. t. u.'s per cubic foot of the mixture, of air and gas. Therefore, in burning the same number of cubic feet of mixture of air and gas in each case, it would produce the same number of heat units, and the time required would be the same. If you have more b. t. u.'s, of course you will heat the water quicker than you will with fewer b. t. u.'s. 630 b. t. u. gas has more than 580. As to whether it is a fact that gas at 630 b. t. u.'s will heat the water quicker or bring it to a boil quicker than 580 b. t. u.'s depends upon how you burn it. On the assumption I made, no. I assumed that the resultant mixture of gas coming out of the burner had the same heat value, therefore it did it in the same length of time. The way I have figured it, it would not matter what b. t. u. you had in your gas, because, when you assume the heating value as it hits your receptacle, no matter what kind of a gas you are giving it, it would not make a bit of difference. It is the general practice to have them so adjusted.

Now when these spuds are reamed out, in order to fur- [fol. 598] nish the b. t. u. content as provided by the statute —in many cases we would be able to make an adjustment by means of the air shutter entirely. Assuming that they can not adjust the air shutter again what percentages of the cases we would be able to do that in, I don't think I can estimate that. The next best thing to do is to put in a new spud or close the orifice of the present spud. * * *

As to who we buy most of our stoves or gas ranges from, I think it is pretty well divided up. We have to have different designs in order to meet the demands of the public. In so far as this arrangement is concerned, they are all similar. I call this the cock. They are all similar type whether they are all the same size or not. The type that we have been buying from Crane & Company, the type of cock that *foes* on our stoves is similar to that. I cannot say that the cock is like that on all of our gas stoves that we have [fol. 599] been buying from Crane & Company. It is similar to that. It has a cock like that and it has an orifice like that, and it has a similar kind of spud. We are still buying them from Crane & Company with a similar cock to that. I cannot tell you whether it is the same size cock or the same size handle or the same size knob. I cannot pick out the specific points where it is different.

We have a part which is very similar to that. Whether the size is the same or whether the exact design is the same in a Crane stove, I cannot tell you. In other words, I cannot tell you whether that came off a Crane Stove or a Clark Stove. It has a spud which screws in the same as this spud does. Those are the kind of stoves we have been buying from Crane & Company. I cannot tell you whether the majority of the stoves made, which we buy from Crane & Company have this spud. I don't buy the stoves. I have looked at our stoves to see what kind of a spud they have on them, but, not very lately. I don't think it is a fact that our company has been buying that kind of a spud for years from Crane & Company.

(May the record show that counsel now shows the witness a different appliance from the one which he had been questioning him about.)

I don't think we have been buying this from Crane & Company for a great many years, with the adjustable spud. I don't order the stoves and haven't examined the last shipment we got in. I don't know whether the shipment before or two shipments before that had those spuds. We may [fol. 600] have been buying that kind for some time. I don't know how long, but I am sure there are a great many in the district that have not. We haven't been buying stoves with that particular adjustable spud from Crane & Company for quite a few years. If we have, then I don't know about it.

By the use of this No. 2 spud the reaming process would be rendered unnecessary, but, we still would have to make the call and make the adjustment. Not only would the reaming be unnecessary, but if conditions developed requiring a reduction of the orifice, it would not require a new spud but simply a new adjustment to reduce the orifice.

When we had our conferences relative to the methods of changing these appliances, we knew that there were some adjustable orifices on the territory, of course. We knew that there were some that were not, that had these removable orifices; we knew there were some that had fixed orifices. We instructed those men that when they came across one of these adjustable appliances, how to adjust them. That was their course of instruction. I do not think

we have any data showing the percentage of appliances that they adjusted that had adjustable orifices. I do not think that was summarized. Whether it is on the records or not I do not remember. * * *

[fol. 601] As to what percentage we were able to adjust by the movement of the air shutter and not ream it out I have seen the figure, but I have forgotten it, it is tabulated. Where these fixed orifices have been drilled out or reamed out, we do not yet know what we are going to do to reduce that orifice. I think that is another thing we have not come to yet. I hope we would not have to throw away the stove there because the orifice is too large. I think individual cases would have to be worked out by the man who got to that job. In some cases he might be able to pean over the hole, make it a little bit smaller. We pean it over with a hammer, that is, hit it a couple of times with a hammer to make it smaller. Then after that had been done, of course, the hole would have to be made round again, the hole might not be just round after peaning, and it would have to be made round again. I do think that could be [fol. 602] done in a great many cases. The metal that the orifice is through is generally cast-iron or in some cases it is brass. You can pea/ cast iron on that size and the amount of peaning you have to do, but it is much more apt to break than brass. It is my judgment that in those cases where they have a fixed orifice, they may correct it by this peaning process. It would not be necessary to get rid of the stove and buy a new appliance. Of course we could accomplish it by putting in a new spud if there was a removable spud; but I was speaking of the case where there was no removable spud. I assumed that you had made all the air shutter adjustments you could before you touched the orifice, where it was a fixed orifice. But where you were able to make the adjustment by the movement of the air shutter satisfactorily, all you would have to do would be to move it back again.

I should think the housewife would move these air mixers, the air shutters, very frequently, and I wish they would do it more than they do. It is usual in almost any household where the gas is not working properly, for the housewife or the husband to adjust the air shutter to some extent, the mixer, but we do a great deal of it. We still print

on the back of our gas bills instructions to our consumers as to how to regulate the air mixer and hope to educate them some day to take care of their own. I don't remember whether advice was also given as to how to clean it, and the advantages of keeping these appliances clean and free [fol. 603] from dust and dirt. A great many of the men who made these adjustments, were regular employees of the company and they broke in men hired for the purpose. I do not recall definitely how many of them were regular employees but, it was somewhere around a dozen that we used. They were regular inspectors, and we used them to train in the new men. Before that they were inspectors in what is known as the Shop Distribution Department, which takes care of appliances and meters and that class of work. * * *

[fol. 604] There were many burners that did not have to [fol. 605] be adjusted at all, where they were adjusted improperly for the gas they were getting then and we changed the gas and they came right. If you see one without a tag it would mean that we have not adjusted it. In the burners that we have adjusted we made it so that if the heating power of the gas were increased from now up to 650, it would then hit the receptacle. It would not hit the receptacle with 22-candle-power gas with the average of 630 b. t. u.'s., prior to our adjustment.

I have already testified we could bring the general rule of appliances down to about 600 b. t. u.'s without trouble, because they were then adjusted between 600 and 650. That was the general rule. From 600 to 650, before our adjustment was made, the flame in those appliances was adjusted so that it did not hit the receptacle. We did not adjust all those burners. Those were before we made any house to house canvass. Before we went on to the territory and made the adjustments, our consumers were using 22-candle power gas. We adjusted the burners so that they would consume gas from 537 to 600 b. t. u.'s; that is the adjustment we made.

We do know something about the length of flame that was in the burner and was burning before our adjustment, because some cases we did not have to make an adjustment, the burner was properly adjusted at the time for 600 or down. That was the adjustment of October, 1922 to May,

1923. Prior to that adjustment which I have just referred to, from October, 1922 to May, 1923, we never made any house to house inspection to determine whether or not the [fol. 606] adjustment were correct for the use of 22-candle power gas. The only thing we knew of it was that we had adjusted a great many burners in the usual course of business, and those were properly adjusted; but as to the ones that the housewife adjusted herself the first definite knowledge we received from a house to house canvass was through the adjustment and inspection beginning in October, 1922, and running to May, 1923. Those were the first statistics we ever got. The length of a flame on a stove burning 22-candle power gas would vary, according to the b. t. u. content of the gas. 22-candle power gas was from 600 to 650 and that would not produce a very long flame in the appliance.

If the burner is properly adjusted to burn between 600 and 660, the flame would not be too long at 660. I don't know whether they were adjusted or not. I don't know how many of them had a long flame where they were burning 22-candle power gas. This is the first time that we have ever assumed the responsibility of burner adjustment. Prior to this they have been burning a gas which is variable from 610 to 650 or 660, sometimes the heating power is higher. Sometimes the flame is the length of a 650 b. t. u. flame and sometimes the length of a 600 b. t. u. flame, which is not very different.

Despite the variableness of the heat content of the 22-candle power gas, and also the length of the flame, we never have inspected the consumers' premises and the appliances [fol. 607] on them with the idea of making any adjustment until October 1922, because you could not adjust the burners, that was the difficulty with the 22 candle-power rule, you could not adjust the burners to take care of the full range efficiently. We could regulate the appliances so that they would burn gas efficiently varying from 600 to 660 if you made a house to house canvass, but we did not. I did not testify that the reason we did not do it was because it was an impossibility to make a correct adjustment.

Our records at present show that with the gas we are making now we are losing from 16 to 18 b. t. u.'s at three

miles; it would therefore be my opinion that with a higher b. t. u. you would lose more, because you have more of the condensible hydrocarbons in that higher b. t. u. gas. I cannot tell you how much more than 18 it would be. I should think it would be about 20, but that is an estimate, as I say. I have a direct basis for my other estimate, and I would rather stick to that.

In order to deliver 650 b. t. u.'s we would be compelled to manufacture gas at 670, to deliver gas eight or ten miles away. I might explain to the master and to you, that the worst drop we get is near the works, where we have the heaviest hydrocarbons in there. The lighter vapors drop out first and, after that, we get less drop as we go farther away. That is shown very distinctly in our condensation. [fol. 608] We get much more condensation near the works than we do in the outlying districts. Once our initial 20 is out, there is less tendency to drop farther. The gas becomes more stable. I am talking about the b. t. u. content. The illuminants do drop out very readily adjacent to the plant. The b. t. u. content, as I have said before, is dependent largely on the hydrogen and the carbon dioxide and the marsh gas, which are all fixed gases. Now, our illuminants are very largely dependent in the light benzine vapors which drop out right away, but those light benzine vapors and the ethylene, which also drops out, lower the heating value. The heating value that comes from those is dropped out near the works. Our gas gets more stable as it goes away and more stable as the heating value becomes lower.

Gas made at the works, 24 candles, drop out a candle and a half within a mile from the plant. It takes a little over four gallons of gas oil to make 22 candle power gas, measured one mile from the works—4. 1 or 4.2. Now we are using 3.5 gallon of oil and we are getting about 580 b. t. u. content. I haven't any idea about what candle power gas we are getting. We don't test it. The gas maker is supposed to make this 580 b. t. u. gas using 3.5 gallons of oil. Should be somewhere between 19 and perhaps 21.

I did not tell you that when you inject one or two gallons into the blue gas and making a candle power gas, that the

candle power does not assert itself until around 2.5 or something of that kind. I think somebody else might have [fol. 609] told you that. I said I had not seen it done, I never tried it. I agree that I heard other people besides you express that opinion, but I have never seen it done. For all I know, one gallon does make candle power. I don't think I have ever seen any literature on gas engineering which says that by the injection of one gallon or two gallons, you do not get any candle power.

The heats that are usually carried in the generator and carburetor and superheater in making 22 candle power gas irrespective of the b. t. u. content vary with the different materials and the different qualities of oil, and so forth. We generally carry between 1,350 to 1,250 on a candle power basis, and those will change according to the time of the year.

In order to work on a heating value basis, whether it was 650 b. t. u.'s or any other, we tried to get more of the marsh gas in our finished gas, and to do that, we carried higher heats in our carburetor and superheater. I do not know how much longer our blow would be in making b. t. u. gas than in making 22 candle power gas. That is not a definite figure at all. All of those figures on length of blow and length of run and temperature are conditions that change. Not daily, but almost daily. We can not work to an exact rule in any of those figures.

I testified that during the Toluol period, if you reduced the illuminating quality of gas 40 per cent, you may reasonably anticipate that the heating value will not be reduced [fol. 610] more than 6 per cent when we were scrubbing gas, that was our experience. That was an experience over quite a long period that we had, at the Brooklyn Union plant in 1918 when I was making the Tolulol extraction and also at Boston; during Toluol extraction you will have that happen. You could not arrive at that condition in any way that I know of unless you scrubbed your gas. The rule I have stated that where you reduce the illuminating quality forty per cent., you would only reduce the heating value 6 per cent., only applies during the period when you are scrubbing the gas for Toluol. But it would not apply at any other time, if you reduced the candle-power forty per

cent by not putting in so much oil, that would be a different story entirely.

We did reduce the candle-power at that time by scrubbing our gas, after it had the oil put in it. We never did that before for Toluol extraction, that was during the war time.

I will explain what the toluol extraction was and the purpose for which we were doing it. During the war it was necessary for the Government to have T. N. T., the well-known explosive, and in order to get that, the toluol was extracted from the gas in various part of the country, and that toluol was afterwards nitrated to make T. N. T., and we, the Brooklyn Union Gas Company, extracted the toluol from the gas that was manufactured at that time and shipped the material to the Government; the Government did the work and shipped the toluol to Du Pont, and it was nitrated there in making explosives. In order to extract [fol. 611] that toluol, the gas was put through what are known as scrubbers. The effect of that is to reduce the candle power. It reduces the candle power about 40 per cent., if I remember rightly, and only about 6 per cent., for b. t. u.'s, showing that a gas with much less candle power could have almost the same b. t. u.'s. That is, if you were extracting toluol from a gas of that analysis, whatever that resultant analysis was.

Now, take the 22 candle power gas with the average of 630 b. t. u.'s. If you reduce that forty per cent, you will reduce your candle power and the relation will probably be entirely different. You also would reduce the b. t. u.'s to a more or less extent. We figured three candles. The 40 per cent., and 6 per cent., ratios would not hold. That was where we changed the analysis of the gas by extracting this toluol.

Starting with 22 candle power gas and reducing it 40 per cent it will make it 13 candle power. That reduction is accomplished by reducing the quantity of oil. That is the only way you can reduce the candle power, unless you scrub it. If you reduce the 22 candle-power 40 per cent., it would bring the candle power to about 13 candles. To make 13 candles would require 2.1 to 2.4 gallons of oil. By the use of 2.4 gallons of oil, we would get in the neighborhood of 495 b. t. u.'s, so that our candle-power has been

reduced from 22 to 13, a reduction of 40 per cent., and our b. t. u.'s have been reduced from 630 to 496, which is a [fol. 612] reduction of about 21 per cent, in b. t. u.'s by the reduction of the quantity of oil used. The use of 2.4 gallons of gas oil produced 13 candles. It would not take quite as much gas oil to make 11 candles.

On page 1360 of the record of yesterday I was asked this question: "Q. Well, is it true, then, that gas of 11 candle-power would average about 620 with variations, as you say—620 b. t. u.'s? A. Why, yes, I think that is a fair statement."

I will explain why 13 candle-power gas has 495 b. t. u.'s or 496 b. t. u.'s, and 11 candle power gas has 620 b. t. u.'s. During the toluol extraction the heating value, either before or after that, had been reduced a certain per cent and the candle-power had been reduced another per cent, and on that basis the candle-power arrived at was given, and the heating power arrived at was given.

In my testimony on page 1359, where I was asked what would be the b. t. u. content of 11 candle power gas over a period of a year I stated in substance that it was 620 with variations. Now, in view of the testimony that I have just given that 13 candle power gas had b. t. u. content of only 496 I will explain why 11 candle power has a b. t. u. content of 620 as I testified. As I stated a few minutes ago, this testimony of yesterday was all after a question put by you on page 1355 as follows: "Haven't you any information at all as to how much 14 candle power gas would contain, how many b. t. u.'s?" I cannot answer that ques- [fol. 613] tion, except in this way, which perhaps would be all right; During the toluol extraction period, as I remember the figures, we cut the candle power down to 50 per cent. or 60 per cent. and our heating value during that time was reduced only 5 or 6 per cent. I supposed you were talking about what would be the heat content of 11 candle power gas during the year of toluol extraction. I can give you an approximate figure as to what the heat content of 11 candle power gas is, without taking into consideration any toluol extraction or anything else. I would rather not give any figure on 11 candle power. Any of those figures down there are such an estimate that I do

not care to make any figures on them that may or may not mean anything. I can tell you the method that was used for calculating it, but that would be just a calculation.

I do not remember how many gallons of gas oil we were using in making a thousand feet of gas during the latter part of 1920. Flame temperature is a calculation which is based on the analysis of the gas. I mean that knowing the analysis of the gas, the flame temperature can be calculated. By the flame temperature I mean the temperature of the flame itself as burning. I do not think I can make the calculation here. It is ascertained by the use of a formula. It is rather intricate. In making the computation of the flame temperature, we take the analysis of the gas as shown by chemical analysis, and from that compute the flame temperature. The flame temperature does not show what the illuminants are or what the percentage is of illuminants. You start with that. The temperature [fol. 614] of the flame itself is what you get. This calculation whereby you determine the temperature of the flame does not enlighten you at all as to the illuminating properties of the gas.

A good while ago I made calculations to determine flame temperatures but it has been a number of years since I have done it. I am a little rusty on that. When we were making 22 candle power gas we had no testing stations outside of the works to determine how much of a drop there was in the candle power in five miles.

When we were making candle power gas back in 1919 and 1920 our tests did not show both the candle power and the b. t. u. content of the gas away from the works. We only took the test at the works. We did make b. t. u. tests, but there were not many tests made, not as we are making them now. Candle power was our standard then and we were making candle power tests, B. t. u. tests were made incidental to that more or less irregularly. It is my recollection that we made three or four b. t. u. tests a day, during that period.

After we went on to the b. t. u. standard in October, 1922 we made b. t. u. tests every hour at our works and also tests on the district, and we have not made any candle-power tests. We were glad to get rid of them. We have

three new testing stations since we have been making b. t. u. gas. The City does not send us a card now showing the result of their daily tests. They did up to sometime in 1922, but I do not remember when. It was before we went on to [fol. 615] the heating value standard, they stopped sending it to us, and at that time they showed only candle-power and pressure. At that time they had a testing station on the corner of Court Street and Atlantic Avenue, and they had one over on Berry Street, and they had another one, but, I have forgotten the location of the other one. I do not know if they are still being used as City testing stations. I do not know whether they are testing our gas today or not. The Public Service Commission makes tests of our gas, from one to three tests a day at each of our testing stations. They have men to make these tests. I do not know their names. They send us data as the result of their tests. They have been doing that since October, since we went on to the heating value standard. Prior to that, I do not think, they made any test. After we went onto the b. t. u. gas they sent out men to test the gas at those three points. That information comes to me through Mr. Uhlig, our chief chemist, in the form of a report every day. I say every day—they may report two days back in one, or the like.

They test only for b. t. u. at those stations, we have no photometers in those stations. We have photometers at our works, but some of them have been dismantled. When we were making our candle-power test at the works in 1919 and 1920, we made b. t. u. tests of that gas. That wasn't done to show the variations between the candle-power and the b. t. u.

[fol. 616] January 25, 1924.

CHARLES C. ATWOOD

Cross:

I am assistant chief engineer of the plaintiff company and its subsidiaries, The Newtown Gas Company, the Jamaica Gas Light Company, the Flatbush Gas Company, the Richmond Hill and Queens County Gas Light Company and the Woodhaven Gas Light Company. I do not receive any

salary from any of the subsidiaries. All of my salary is paid by the plaintiff company. I do work for the subsidiary companies. I could not tell you how much work or how much of my time I devote to the work of the subsidiary companies. I keep no record of that. At times I have some problems or some questions presented to me which have to do exclusively with the subsidiary companies, but I don't know just how much time I devote to that. * * * These three waste heat boilers were installed at the Metropolitan Works by Bartlett-Hayward Company between June 1, 1923, and the present time. It takes quite a while to put them in. They were started, I guess, about June 1, and were completed during 1923. I don't know just how many are operated to-day. They are all ready to go, they are all ready to operate, and it depends upon the demand whether [fol. 617] they are used or not. I think one or two of them have been used, but I cannot tell you that definitely. They are all ready to go, but whether they have had demand enough to put them on or not, I don't know. The size of the present blower at the Metropolitan Works is twenty thousand cubic feet per minute. Fourteen thousand cubic feet per minute was the old one, but there are seven of those new ones by the way; not one new one, but seven new ones.

We have some boilers with Cox automatic stokers on them. That is a new installation just completed at the Citizens' Works by our company. We haven't any other automatic stokers on any other boilers. We have not put in any new boilers at any other plant. The advantage of having the automatic stokers on the boilers is that is increases the capacity of the boilers and there is a decrease in the labor of tending them; also a much larger investment, if that is an advantage. Sometimes on the rate base it is an advantage to have it anyway. The boilers with the Cox stokers are not in use. The changes in the size of these blowers were made by the company. That is, the company gave the orders to have it done. The physical changes were done by us. Larger sized blowers have been used ever since about the 1st of June, one after another, as they were gradually completed. We increased the size of the connections on two of the generator sets, two of the Williamson generator sets, and installed hydraulic operation on [fol. 618] three of the Williamson sets. That covers, I

think, the major changes that were made there. Since these changes have been made, the apparatus on which they were made has been in use.

I testified that the connections on the four generator sets in the Nassau Works had been increased in size. The hydrogen pipe previous to the change was thirty inches in diameter, and it has been increased to forty-eight. That necessitated other changes of the fittings connected with it. The size of the take-off pipe was increased from 24 inches to 36 inches. The stack valves were increased from 24 to 36 inches, and the blast connections were increased from 20 inches to 24 inches. There were no major withdrawals or changes. They were not repairs. Why, it was an addition. We increased the capacity. I do not believe I have at my finger's ends the size of the old boxes marked C at the Nassau Works. The new boxes are about 40 by 50 by 12 feet deep. That figure is not definite by any means, but that gives you an idea of the sizes. Those changes in the purifier boxes were made by the Bartlett-Hayward Company. That accommodation room was erected in the engine room. Another floor was put in in the engine room and the accommodation room was put on that floor. That was a combination of a plumbing job and a builder's job, and I do not remember who did that work. The holder at the Citizens Works was an additional holder. The Bartlett-Hayward Company installed that. I think in 1919 or 1920 it [fol. 619] was we dismantled a holder. That was the holder of 100,000 cubic feet capacity at the Union Station. The three new generator sets installed at the Citizens Works since June 1, 1923, are in use; they may not be in use today, but they have been in use. They have been used in the regular operations of the company since that time. I could not attempt to give you a date when they started each one of them up. It was towards the end of the year. I stated that those boilers had not been used, but ready to go. The Bartlett-Hayward Company installed the generator sets, and the Cox stokers were installed by the Cox people, and the boilers were installed by the Babcock & Wilcox people and the building was put up by the Berlin Construction Company, as I remember the details of that. We also installed two new additional station meters. They are in use. I presume we put in some two-inch valves in some places,

and one-inch valves in other places, but I am trying to tell things that stick in my mind that I can remember. * * *

[fol. 620] The Jamaica Station is located on Church and Beaver Streets in the Borough of Queens. The plaintiff does not serve directly any consumers in the Borough of Queens. I think I have seen entries on the books to the effect that at Jamaica Station the buildings and holders were owned by the Brooklyn Union Company. I am quite certain of that. I have no personal knowledge—just what I gathered from seeing certain entries made. I think that pipe rack was constructed on there since I have been with the company. That is the only one I can think of now. It is possible under the system that exists with regard to the inter-connection of mains in Brooklyn that the Jamaica holder has gas some of which may have been made in any one of the works or in all of the works. The mains which carry gas to that Jamaica holder are tapped on the way to serve consumers. I can't remember definitely whether in the Borough of Queens, but it is my impression that there is one governor comes off that main in Queens before it gets to Jamaica. In our system the gas which goes out of that holder may go one way or another. The gas in those holders [fol. 621] is measured in this way: We know how much gas is in the holder in the morning, and we know how much gas is in it every hour during the day; if no gas has been put in we, of course, can tell how much gas has gone out, but where we are feeding in and feeding out at the same time, we don't know. At each hour the height of the holder is read, and knowing the capacity of the holder for each foot of height, we know how much gas is in that holder. The officers of the subsidiary companies have their headquarters at 176 Remsen Street, but we have branch offices for the subsidiary companies in their various territories. Of these departments, namely, the New Business Department, the Shop Distribution Department, the Claim Department, Street Department, Holder Distribution Department, do work for the subsidiary companies. The Public Service Commission men are using the auditorium every day. I don't remember how long they have been using it, but it is a long time. Before they used it it was used for auditorium purposes, for a meeting place when we have meetings of any kind where we want to gather a number of men together.

Stockholders' meetings are held there, for one thing, and many other meetings. The seating capacity I should think is about 150. The room is approximately 40 by 50 or 60. There are portable chairs in rows of three. It is fitted up with a council table at the head, and that is all. Generally when we have a meeting somebody delivers a speech. Meetings of the managers of the different branches, for instance, [fol. 622] are held there, and the Safety and Sanitation Committees meet there, and if there is to be a meeting for any special purpose of a dozen or more men very often it is held there. We use that in the place of the conference rooms when they are occupied for other purposes. I can think of two meetings a month that fill it fairly comfortably well. There may be some more.

We have certain appliances stored in the cellar of the old office building at 180 Remsen Street. Those are mostly lamps and that type of appliance. We have a storeroom in there, I should think, about the size of this room, about 20 by 25. The building at 130 Atlantic Avenue is used as a storehouse for appliances which are also sold by the subsidiary companies. That whole building is used for storage and that is the only thing it is used for. All of the available space is not taken up with appliances. That building may be full now and it may be empty at another time. That is our extra storeroom. When they have extra appliances to be stored, they are put there, at times when we are meeting our extra demands, in the fall and the spring. I visited there in the spring, I guess, of 1923. There was quite a lot of space in it, and there was also quite a lot of apparatus in it. About 50 per cent was used. There is only one watchman there. We have never taken the fire-escape down. That was there when the building was occupied by a number of people. That is my supposition in the matter. It is quite a while since I have been at those [fol. 623] premises. I have no fixed time for visiting the holder stations. I try to get around to all of the works and stations as often as I can find the time to do it. Wythe Avenue I have been to, I should think, six times since the 1st of June. That was because there was some construction work going on there. I had other reasons for going there, too. I do not visit the other holder stations as frequently as I visit that station. I should think that on the average

I would visit each holder two or three months. I get around on those inspections at the St. James Place property about once in six months, I think, for those miscellaneous buildings.

I attended these experiments at Rye and watched the flames burn. I did not manipulate the apparatus in any way. We took burners up which had been adjusted here. All we did was to watch them burn up there. Those appliances which we took up were appliances which were taken from the company's shop, similar to new appliances. Those 150 men went about changing appliances are exclusively Brooklyn Union men. Inspections between October, 1922 and May, all referred entirely to the Brooklyn Union. I excluded anything that may have been done with reference to installation in the subsidiary plants. When I testified that the appliances had been so adjusted that we could operate down as low as 537 to 550 I don't believe the appliances as now adjusted could safely and efficiently burn gas at 525 b. t. u. content. * * *

[fol. 624] Since June 1, 1923 the Brooklyn Union Company has not made a gas having a heat content of 650 British thermal units.

The appliances on the district vary. I think I had better qualify that a little bit. They were adjusted by men who are on the district all the time, that is their job making all kinds of adjustments and inspections and that kind of work. They are very familiar with the burners of all kinds as they are, and they adjusted these burners to the best of their [fol. 625] judgment as they were on the district. I did not turn the air shutter in the adjustment of the appliances taken to Rye. I allowed the men on the district to use their discretion and judgment as to how that appliance should be regulated. That fact is that men who are much more familiar than I am with the adjustment of these appliances on the district, the mechanics, adjusted the burners, that we used for our experimental purposes at Rye. We did not specifically direct the extent or nature of the adjustment. We left that to these men under general instructions to adjust in accordance with their experience in the district in question, except that I saw the burners operated in this district on this gas; I saw the appliances we took. I did not see the old appliances on the district. Of course, I have

seen a great many appliances in our appliance shop adjusted as they presumably are on the district, and used those as a guide in adjusting the new ones. I am familiar with the burners as they are adjusted in many places, such as our fitters school and such as our appliances exhibition rooms. I could not and do not pretend to have personally inspected the burners in use in these appliances throughout these districts. I received reports concerning the condition of those appliances. I took new appliances and instructed our men to adjust those appliances to conform to the conditions in which they found the appliances in the Districts in actual use. Whether they made the adjustment in accordance with my instructions I only know through their reports to me. They present to me these new appliances and say: "These have been adjusted in accordance with your instructions, Mr. Atwood." They may or may not [fol. 626] have obeyed my instructions, and I cannot tell, because I have not made a personal examination of the standard, namely, the appliances in actual use on the District, but I have one further thing to help me on that, and that was the appliances that I had seen in our own Departments, but not on the consumers' premises.

CHARLES C. ATWOOD

Redirect:

I brought Rye experimental appliances right back to Brooklyn and burned in them the gas then being supplied. We had done that before we took that up and afterwards as well. We did it when we got back. That was before the change from 22 candle power to b. t. u.'s. I have seen a variation in the capacity in a generator of 25 per cent. I cannot put my finger on the date, but the figures that I had in mind were some figures we obtained at one of our works where we were making 3,000,000 cubic feet per day to a machine, and we dropped down to 2,200,000 cubic feet per day per machine. The range which I have testified to would be due to a difference in fuel. All generators cannot be worked all the time on account of the repairs which are necessary. The re-checkering is the most regular repair that is made. It is made once in a thousand hours. Then there are from time to time other repairs which are like any piece

of apparatus, necessary at irregular intervals. It is true that at all times some generators are down. We put no Cox stokers on any old boiler. As a general proposition, that is not a practicable thing to do.

[fol. 627] Plaintiff's Exhibit 149 for identification offered in evidence is a specimen of an actual report of an adjustment made on the consumers' premises. That is one of the adjustments between October 1922 and May 1923. The printed forms were sent to the addressograph department, and there the names of the consumers and their addresses were placed upon them. As appears at the top the printed name and address, the addressograph department is where our bills are printed. They have a plate for each meter which operate in an addressograph and on each plate is the name of consumer and his address. After that these sheets were given to the adjusters. The adjusters went out on the district and visited a house and investigated the appliances in that house. They marked on the slip the kind of appliance, the name of the appliance, the adjustment made and their own name. Then they had the consumer sign his name. I don't know whether they did any of these things or not, anything except that I got a report. After this was over I got these slips and on them what was purported to be shown. Each slip purporting to show what I have stated. There were variegated signatures purporting to be those of the consumer, the man who did the work and the supervisor. Of course, I am not familiar with the handwriting of four hundred thousand odd consumers. There were 464,991 inspections made and there were a few more reports than that. I haven't the figure here, where two inspections were made of the same appliance. The number of reports is in excess of the figure you have just made. The blue pencil mark on that Exhibit No. 149 for identification are figures used in tabulating. They were made at the [fol. 628] home office, afterwards, in tabulating these reports, to assist in the tabulation, each piece of work or kind of work or kind of appliance was given a key number. On the front of the report in the first place it says "C. G. I." which means, "Can't get in" and on the back, "When can inspection be made," it says "After six p. m." and the back shows that a second visit was made at a later date, and the

report shows the mark "Party Out." Another visit was made at a still later date, and the report shows that the inspection was made. There are some reports where it was necessary to make three visits before the adjustment could be made.

As to the send out for January 20th and January 21st of this year, and also what the relative temperatures were on those days, I would have to refer to the books and records of the company. The records are kept in our office under my direction. I have refreshed my memory by examining these records of the company kept under my direction, computing the facts, and so forth. The send-out on January 20 was 66,321,000 cubic feet, and the temperature was 31. The send-out on January 21 was 94,944,000 cubic feet, and the temperature was 8.

The number of consumers and the temperature of the atmosphere determines the demand for gas. Of generators the proportion working at any one time depends entirely on the demand and the necessary repairs that go with the operation of a plant. The consumption of gas varies from time to time. We find the low mark in the summer; the high mark comes in the winter. The peak hour comes along in October. I have not looked at the records for some years and do not know whether that is correct. There will be [fol. 629] a total annual demand and at the same time there will be a day in the year when there is a maximum day's demand and likewise there will be a maximum hour's demand. During the time that toluol was being made, those toluol extraction plants were operated by the Brooklyn Union employees, and under my direction. At that time I was employed by the Bartlett Hayward Company. I am familiar with these plants during that operation and subsequent thereto. The buildings were in good condition when the company purchased them. This period that I speak about is back in 1918.

The number of meters stated by me in the Metropolitan plant, in my cross examination, I stated that the total number of meters there were now 5 meters instead of 6 meters and I want to correct the figure to 6.

Plaintiff offered in evidence Exhibit 149 for Identification as a specimen. Defendant objected to it upon the

ground it is incompetent, irrelevant and immaterial and evidently is not a specimen.

The Master: I think the exhibit should be admitted, gentlemen, and I overrule the objection.

(Plaintiff's Exhibit No. 149 for identification marked in evidence.)

[fol. 630] JOHN T. WHITE

Direct:

I am engineer of Distribution and Assistant Secretary of the Brooklyn Union Gas Company and its subsidiary companies. I have been with the Broklyn Union Company for thirteen years.

I was first employed by the Equitable Gas Light Company of New York, a public utility manufacturing and distributing gas in what is now known as the Borough of Manhattan. This employment covered a period from 1884 to 1899, and was in the distribution department of that company. In the last five years of that employment I had complete charge of the distribution system of the company, both in regard to the maintenance of the distribution system and the construction and extension of the system. From 1900 to 1904 I was employed by the New Amsterdam Gas Company, another public utility company, manufacturing and distributing gas in the Borough of Manhattan, and served as assistant to the Superintendent of Distribution. There I had charge of the cost accounting records of the [fol. 631] Distribution Department and field work under the supervision, of course, of the Superintendent of Distribution, and of the maintenance and extension of the system. From 1905 to 1909 I was employed by the Consolidated Gas Company of New York as Assistant to the Superintendent of Mains and Services. There I had charge of the cost accounting of the branch offices—of the Street Department and the extension and maintenance work and such incidental work connected therewith as arose. From 1910 to the present time I have been employed by the Brooklyn Union Gas Company, from 1910 to 1920, as

Superintendent of the Street Department, having entire charge of the Distribution System of the company and its subsidiary companies, covering the maintenance of the Distribution System and extension of its mains, services and meters and the incidental maintenance work connected therewith. In February, 1920, I was appointed Engineer of Distribution and Assistant Secretary, and still hold that position up to the present time.

The cost accounting system is the cost accounting of the actual performance of the work, and covers a knowledge of the costs of the material and the costs of labor going into a completed unit of work. In other words, it is assembled for the purpose of forwarding through the proper channels so that it eventually gets on the books of the company. I am a Member of the American Gas Association and the Illuminating Engineering Society, and am also licensed by the University of the State of New York to practice professional engineering.

[fol. 632] My duties as Engineer of Distribution are practically the same as my duties as Superintendent of the Street Department. The system of the plaintiff during the period I have been connected with it was a requisition forwarded to the Purchasing Agent, the material inspected upon delivery, a voucher stating the receipt of the material sent to the Purchasing Agent and on receipt of bills for the material by the Purchasing Agent they are sent to my department and there checked as to quantity and quality and price, and the information is entered upon the books kept for the purpose. This information eventually goes through the proper channels to the auditor.

The material is cast iron pipe, specials, and by specials I mean the fittings used either at the intersection of the streets or to go around some subsurface obstruction; lead and yarn for the joints; timber; valves and valve boxes to cover the valves over the roadway; sand and cement and broken stone for the purpose of making concrete. We concrete the valves boxes. For the labor we have foremen, caulkers, yarners. Men who put the yarn in the joints before the caulkers attend to the lead part; laborers; water boys; watchmen and City Inspectors. The time is kept by another slice of the organization which is above the men who actually perform the work. That is to say, I am giving

you the men now who actually perform the work in the trenches and create what I call the bare-bone cost, the elements of labor going into that unit.

[fol. 633] With reference to services, we have wrought iron-pipe and cast iron pipe, wrought iron pipe fittings, valves, valve boxes, the sand and cement and broken stone for the purpose of making concrete where required, and yarn and lead and sometimes specials that are used on main work because in the large size of services they are installed with cast iron pipe, in many instances and for the labor we have foremen, in some cases where we use the cast iron pipe, caulkers and yarners, and then we have the tappers and the laborers and City Inspectors.

During my connection with the plaintiff, I have made requisitions to the Purchasing Agent and, in the case of cast iron and wrought iron pipe, directed its inspection by an outside firm at the foundry, inspected it upon delivery at the railroad station or freight yard and again inspected it before it went into the trench. In addition to that, the other material has been treated in somewhat the same manner by inspection upon receipt and the examination of the bills for material which are forwarded to our department by the Purchasing Agent when they are received and noted on a book kept for that purpose, which show the quantities and the prices charged.

With reference to labor, I have supervised the employment of labor and directed its rate and rating. I have known and kept myself informed of the labor and material costs entering into the laying of mains and services. During the time of my employment with Brooklyn Union Company I have supervised the installation and overhauled over 50 per cent of the main system as it existed as of June 1, [fol. 634] 1923. Covering the same period there have been installed over 39,000 house service pipes and over 55,000 service pipes repaired. The repairs and installations of service pipes give an additional opportunity to view the mains to which they are connected. That was my opportunity to see them if they are exposed. I did embrace the opportunity of seeing them exposed personally by going out—I was constantly on the district and I have viewed the greater part of those exposed. In addition to that, I have

supervised and studied the reports that were turned in by the people who were engaged on the work.

In 1910 when I took charge of the street department, Mr. Sammis, now dead, the then District Superintendent, turned over to me some fourteen or fifteen books of main records which, up to that time, had been kept in a safe in his office. In regard to the services I found that the records of the services were kept in the different commercial branches of the Brooklyn Union Company. I collected those books and, since that time, both the service record books that existed in 1910 and the main books that existed at that time, have been in my custody.

(Books marked Plaintiff's Exhibit Nos. 150 to 163, inclusive, for identification.)

The period since 1910 has been kept in my office under my supervision. These books which have been marked Plaintiff's Exhibits 150 for Identification to 163 for Identification are the books which I received from Mr. Sammis and also the books covering the subsequent period produced here by me at your request. During the first five years of my con- [fol. 635] nection with the company, from 1910 to 1915, in addition to operating the distributing system and looking after the installation of mains, services and meters, I was also busy accumulating information in order to start a record to cover the mains and the services, so that we would have, as near as I could get, a record as complete as could be obtained from the data existing. I was out in the field doing that sort of work and at the same time I was accumulating data for a record of mains and services. I instituted all of the forms that are in use at the present time, possibly between 25 and 30 different forms, particularly intersection cards on which I noted openings made at intersections; that is to say, the opening that is made is noted on the card at the time; then if a subsequent opening is made at the same intersection, at another portion of the intersection, why that also is noted on the card. And I established service record cards, foremen's material and labor tickets, pavement recording records, repair and installation records for both mains and services, and every record incidental to the operation of the department, arranged in such a shape so that the record would finally get into the proper channel and then be recorded in a way to make it ac-

cessible for information in the future. Among the various forms there were, reports, tickets, handed in by foremen engaged on a particular job. When I spoke of intersection cards, I meant intersection of a street, where one street crosses another. The main cards are cards that we have entered the parcels of mains as indicated on the records that are now an exhibit for identification in the case, and also the current records of mains. The street or avenue that [fol. 636] the main was laid on, the size and the number of feet run and the date of the completion of the work. The information contained on the foremen's tickets, and so forth is recorded, in the office of my department. I have prepared a card catalog of mains and services and intersections, and that has been kept under my supervision. I started that catalog in 1915. It has been kept since in the office of my department. It consists of six steel safe cabinets in which there are possibly over 200,000 cards. These contain the records of the mains and the services and the location of the valves for both the mains and the services. In 1915, under my direction, we took these main cards and noted on them the parcels of main obtained from the records or the books marked for identification, and put down the size and the location, that is the street and from what point to what point the main was laid, and the year that it was laid, if the information was obtainable from the books, and the number of feet that was laid. These cards were arranged alphabetically and numerically and started the record we are describing. Upon the completion of these cards, we plotted on a series of maps—map atlas—the locations as indicated on the cards, and when that was finally completed, we found there were instances where we had consumers or public lamps and no indication of a main as indicated in the records and the cards. No record; that is, we knew we had consumers and public lamps, but we had no record of any main in that street. I then directed a field survey and had test holes made in the various streets where this occurred, and ascertained the distance of the mains with an idea of [fol. 637] getting the size and the general location, and that, after having ascertained the location to the nearest point, we added to those cards, and they are entered on the cards as field surveys. We had main and service repair records that we had accumulated between the period of 1910 and 1915, which gave us the information as to the existence of

mains. When we found that there were no mains indicated on these records, we made a survey and had the mains located. For the purpose of getting information in what you might call this lost territory, we used both the repair records and a field survey. It was the cards record that we started and the system of forms that I got up shortly after getting on the job in 1910. There were some records, but the information contained on them for our purposes of establishing a map were exceedingly meagre, and I did not consider that they were sufficient or valuable enough to use for this purpose. We used these books that existed prior to 1910. Before we went there, prior to 1910, there was not any system in existence that would disclose the mains to the extent that gave the information that was required in order to map these. It would in part give it, but not wholly. Generally, the very thing you wanted was missing. Possibly the size of the main and sometimes the length of the main. At other times, the description was insufficient, and taking it as a whole it was unsatisfactory to employ for this purpose, in my judgment. But the existence of the mains, the fact there were mains, was recorded with completeness, with the exception of such as I have mentioned where I knew we had a consumer and yet had not a record of a regular main in that particular street. There were those exceptions, [fol. 638] otherwise, the existence of the mains were properly recorded. These books go all the way to 1850. They were recorded in those records that were turned over to me. They did not state to what extent these records were incomplete as to disclosing the existence of a main in the street, where, as a matter of fact, we knew we had a consumer. It was quite considerable extent but as to the percentage, I would not care to be tied down. I would have to make a wild guess at that, and it would only be a wild guess. There were instances and many of them—I should say probably two or three hundred parcels, probably streets, two or three blocks, probably one block, sometimes a part of a block. When you plotted these mains on this atlas space would occur between two lines of parcel descriptions. That might be a block; it might be two blocks, and then again, it might be considerably longer than that. I took that data that I found and then amplified it by further investigation and made up the system that now exists, to which I refer.

I verified the data found in the old records. I verified by the gradually accumulating repair and installation records which had occurred during the period of years, and I am still verifying it; that is to say, we have at the present time, I might say without exaggeration, opened pretty nearly every street in the system for some purpose or other, and in that way automatically, with the system that I have arranged now, we obtain the verification of this record and sometimes two and three times in a single instance. Well, taking a comprehensive view of the entire situation, I should say, that they have been very well verified, substantially in their entirety, and if there are exceptions, they are negligible and I can say very definitely with positive assurance [fol. 639] that I am right. With reference to new mains laid and mains withdrawn, they are noted according to size, location and date on this card system that we have spoken of, and also in the current book marked for identification. First I catalogued the mains and services shown on the records that I received when I took charge, and since 1910 I have personally been in charge and had knowledge of these new installations, and withdrawals.

Our card catalog is in constant use by our department and the company generally and it really constitutes our working plant. Reference is made or at least it is referred to by the water department, the engineers of the sewer department when they have a new project in view, they come to us and get at the location of our mains, wherever they want to excavate or construct. The Transit Commission engineers come over generally and get information as to the existence of mains on any subway project. Before the Transit Commission, the Public Service Commission did. In fact, we are in the habit of leaving the doors unlocked in the nighttime, so that the night dispatcher has access to the records. As frequently occurs, the fire department will call up in regard to the location of a valve, if they want to shut off a valve, for instance, where they are working at the time. That does not occur very often but when it does occur, the dispatcher goes right to the file there and locates the valve for them, the valve they are asking about, and he gives them the location of the valve and the distance from the curb. In the case of a fire, frequently the apparatus gets [fol. 640] right over the box or very near the box, and it is

rather hard for the men to do it, particularly in the dark, so when they have this distance from the house line and the distance from the inside of the curb, of course they have access to the valve immediately.

Our card catalog constitutes our working plan. We used it for repairs always, and any extension that we contemplated making or any repairs that we wanted to make, if we want to get the location of a service valve, and so forth, or if we want to find whether a service is in a house, we consult this plant; in other words, it is our working plant. Our card catalogue which is the source of information when we want information with reference to what is in a particular street for any parpose, repairing, extension or anything of that kind.

(Paper marked Plaintiff's Exhibit No. 164 for identification.)

I prepared Plaintiff's Exhibit No. 164 for identification entitled "The Brooklyn Union Gas Company, Quantity and Reproduction Cost of Mains in Use as of June 1, 1923". I obtained the quantities and sizes from the card catalogue of the system. That schedule shows the quantities as of June 1, 1923. I have formed an opinion based upon the knowledge and experience of the labor and material cost necessary to reproduce as of June 1, 1923, the mains then in use shown on that schedule. My opinion is shown on the schedule in the columns headed "Material and Labor Costs Per Foot," and "Total Cost". During my connection with the plaintiff, I have applied to the Borough President's [fol. 641] Office for permission to open pavement wherever it was necessary; obtained the permit and had the opening made, and, upon completion of the work, have sent an order to the Borough President's Office through the Department of Highways for the restoration of pavements. The dimensions have been taken by the Department of Highways representative and my representative, and, upon obtaining that, the bill has been made out by the Department of Highways and forwarded to the Brooklyn Union Gas Company for payment. I receive that bill and check it.

Quantities and price per square yard and, upon assuring myself of the accuracy of the charge, have approved the bills and forwarded them to the auditor for payment. I

obtained the information with reference to the existence, prior to the laying of the mains shown on Plaintiff's Exhibit No. 164 for identification, of pavement in the streets where such mains are laid, from the Borough President's office of the Borough of Brooklyn. I got the information from printed books issued by the Department of Highways, which show alphabetically the kind of pavements and the streets on which the pavement is laid, with the year it was laid. That is, the Borough President's office publishes books which show, with reference to the streets of the Borough, when, where and what kind of pavement was laid in any particular street. When I got that data I took that and matched it against the new construction as indicated in the records where we had dates and years of mains being laid, and in that way I determined whether pavement existed at the time the mains were constructed, and made my calculation by using the restoration rates of [fol. 642] pavement prevailing at June 1, 1923, and in that way determined what sort of pavement had been disturbed in the laying of these mains. On June 1, 1923, under the system prevailing in this city, pavement disturbed in the laying of mains was restored by the Borough President's office, the Department of Highways and paid for by the Brooklyn Union Gas Company. This system still prevails and prior to that date it had prevailed. That has always been the custom since I have been with the company, possibly with some little exception, where the street is "in guarantee", that is the term that is generally used. That is a street that has just been paved or a street that has been paved within a year or two years, and the guarantee is for three years by the contractor. In that case we first go to the contractor and get a consent to open the pavement. This consent is carried by our man to the Department of Highways, which then issues a permit, but the restoration is even in that case made by the Department of Highways. The item on this Plaintiff's Exhibit No. 164 for Identification "Pavement disturbed for construction." The pavement disturbed for construction of the mains and the quantity is made up of the restoration charges prevailing at June 1, 1923 as made by the Department of Highways to the Brooklyn Union Gas Company. The dollars and cents are arrived at by taking the rates in force on June

1, 1923, that is for restoring it; the figure includes just the restoration price, not for taking it up; that is in the unit above. This is pavement actually restored in the laying of mains but at prices prevailing as of June 1, 1923. [fol. 643] In the item "Insurance, Field Supervision, Office Organization, Storage, Material and Tool Expense, insurance covers the Workmen's Compensation Insurance and Public Liability. That is the rate charged by the insurance companies at June 1, 1923, per $100 of payroll. The field supervision covers that part of the organization such as timekeepers, engineers, rodmen, messengers and other field men above that grade of foreman in the field. Office Organization is almost self-explanatory. It covers the office force necessary to operate this amount of labor, and consists of stenographers, clerks and such other labor that will be necessary in order to operate an office. The Storage covers the cost of storing the material that is necessary in order to keep the gangs working. The Material and Tool Expense is the wastage of material that occurs in the prosecution of any large job, and the tool expense is the difference between the amount of tools that you have on hand at the end of job and the amount you have when you begin it. In other words, there is a certain amount of loss there, and there is a shrinkage in your stock of tools, and that item there is supposed to cover that expense in the prosecution of the work. The figure of dollars and cents in that item represent my opinion based on the knowledge and experience of the reasonable cost of those items in laying the mains shown on the schedule as of June 1, 1923. Primarily, the function of a transmission main is to transport gas in large volume and under high pressure. This may be subdivided into two classes: The first is the filling of the holders, and the transportation of gas between holders. The second is the reduction of the pressure from the transmission main and the service of it [fol. 644] to the distribution mains for the use of the consumers. The distribution main is the main that the consumers services are tapped onto. The figures on Plaintiff's Exhibit No. 164 for identification are included in the one figure. No great difference between the card catalogue and the catalogue of mains except that the service card

has the valve location on it, while the valve location of the mains are kept on separate cards. That is about the essential difference, that is, on our service card we have got the valves and boxes shown too. A service is a pipe connecting the consumer's premises to the main, and ends just inside the foundation wall of the building. There is a prevailing average length in the plaintiff's territory. We make the same use of our card catalogue, the same use as we do of the mains, that is, it is covered by my previous testimony.

(Paper marked Exhibit No. 165 for Identification.)

I prepared also Plaintiff's Exhibit No. 165 for Identification, entitled "The Brooklyn Union Gas Company, Quantity and Reproduction Cost of Services in use as of June 1, 1923." I obtained the units and sizes shown from the card catalogue. That exhibit shows the quantities of services at June 1, 1923, of the Brooklyn Union Gas Company. That is the services in use. I have formed an opinion based on the knowledge and experience to which I testified, of the labor and material cost necessary to reproduce as of June 1, 1923, the number of services then in use, as shown on the schedule. My opinion is shown on the schedule, in the columns headed "Cost per Service" and "Cost." There is no essential difference between the item "Pavement Disturbed for Construction" on Plaintiff's Exhibit [fol. 645] No. 165 for Identification and the similar item on Plaintiff's Exhibit No. 164 for identification. I don't think there is any pavement outlined on Plaintiff's No. 165 for Identification which also appears on Plaintiff's Exhibit No. 164 for identification. On Plaintiff's Exhibit No. 165 for Identification, I intended showing the pavement disturbed in the laying of services. I would say there is no duplication of that pavement disturbed in the laying of services being considered as disturbed in the laying of mains on Plaintiff Exhibit No. 164 for Identification. I obtained my information for that item and made it up in the same way that I made up my item of pavement on Plaintiff's Exhibit No. 164 for Identification. There is no essential difference between the item "Insurance, field supervision, office organization, storage, material and tool

expense" and the item on Plaintiff's Exhibit No. 164 for Identification. That is, it is the same sort of work and incidentals involved in the laying of services as in the laying of mains. In one case I have considered the laying of a system of mains as of June 1, 1923, and in the other case the laying of a system of services as of June 1, 1923, separate and apart from each other, in so far as any duplication is concerned. I do not mean by that, that I have considered the cost in the laying of mains, the restoration of pavement, and then assuming the pavement to have been relaid, considered the cost of taking it up again, putting in the services, the service mains, and restoring it a second time.

Referring to Plaintiff's Exhibit No. 165 for Identification, the pavement strictly speaking, is not reproduction pavement, to use that term. This is the pavement that [fol. 646] has been actually disturbed by the company in the course of its extensions, as far as I could glean. I am talking about both services and mains, considering the reproduction, if I went into the expense of the pavement, the reproduction cost of the pavement over the mains, what it would cost to reproduce at this time, it would be ten times this amount, probably twenty times this amount. In Plaintiff's Exhibit No. 165 for Identification, the service exhibit, I purported to state the cost of restoring pavement which would have been disturbed in order to lay the service mains, if such pavement existed at the time the service was put in, the cost being calculated as of June 1, 1923. That is correct, as far as it goes. The figures here for the pavement disturbed in construction represent the pavement cost or, rather, the pavement disturbance at the time of the original construction. It would cost far more than this to reproduce the pavement that we would have to disturb in order to reproduce the entire system of services, probably ten times more than that or twenty times more than that, because there is more pavement in the streets and roadways now of Brooklyn than there was during the building up of the system, and as a consequence this is not, strictly speaking, a reproduction cost, but it is the cost based on the prices at June 1, 1923, of the cost of pavement that we have disturbed in the course of our existence. My

effort is to show that there are two classes of pavement there in the total.

With the knowledge of the system as it has prevailed in the number of years in Brooklyn, when the *the* pavement was disturbed for the purposes set forth in Plaintiff's [fol. 647] Exhibit No. 164, that service might not have been installed, in addition to the mains referred to in Plaintiff's Exhibit No. 164—nor would the services referred to in Plaintiff's Exhibit No. 165 for Identification have been installed before the pavement was restored, because the services were installed independent of the main extensions, and many of the services were not installed until quite a time after the main was put in, and the installation of services had occurred right down through the line of years, and in that way, the duplication could not occur to any great extent. It is true that having disturbed a given pavement for the purpose of installing our mains, it would be practicable to install the services at that time while the pavement was thus disturbed. That would avoid the second disturbance of that pavement, only over the main, but it would not avoid the entire disturbance. There would have to be a disturbance of the pavement. I do not mean that we take up the sidewalk to get the service pipe in there. The additional pipe in the roadway would have to be taken up in addition to the sidewalk, not quite from the main to the foundation. Assuming the fact that the trench is open to receive the main, there is a portion of pavement beyond that point that would have to be ripped up, not tunneled, that is prohibited by the Department of Highways. We would have to cut right clean down and cut that additional pavement and then go in the foundation or courtyard of the building, or if our main lay on the opposite side of the street from the house in which the service was to be installed, to which the service was to be run, we would have to go across the street to lay our [fol. 648] service. In Plaintiff's Exhibit No. 164 for identification our estimate covers the restoration of such pavement, as existed at the time any given main was laid, and Plaintiff's Exhibit No. 165 for identification purports to give the cost on June 1, 1923, of connecting a service with that main through to the foundation of a particular build-

ing that the consumer desires to have us serve. It involved a second disturbance of the pavement referred to and entering into the calculation in Plaintiff's Exhibit No. 164 for identification, but the disturbance in Plaintiff's Exhibit No. 165 went further than it did in Plaintiff's Exhibit No. 164, it was just to receive the main, while in Plaintiff's Exhibit No. 165 it apparently duplicates that disturbance and adds to it the distance from the main to the house.

In connection with the data I have before me to determine whether or not sidewalks and pavements, or either, existed at the time of the installation of the service in question referred to in Exhibit No. 165, are the years the service was installed and the pavement was installed. Sidewalks I have not considered: I have no data on sidewalks. I did not want it; did not consider it and we did not include a charge for disturbing sidewalks.

During my connection with the plaintiff, I have had to do with the purchase of meters. In the same way that I have testified in regard to main and service material. The requisition is sent to the Purchasing Agent, and upon receipt of the meters vouchers are made out and the bills are returned to us and they are treated in the same manner as [fol. 649] the main and service material, giving us the prices of the meters and the quantities and upon the obtaining of *the obtaining of* that material it is entered in the books and kept for our information. During my connection with the company I have kept myself informed and know the market price of meters.

(Plaintiff's Exhibit 166 marked for identification.)

I prepared Plaintiff's Exhibit 166 for Identification entitled "The Brooklyn Union Gas Company, meters owned as of June 1, 1923"; assuming that on June 1, 1923, the Brooklyn Union Gas Company owned the number of meters shown on that schedule of the sizes and descriptions shown, I have formed an opinion based on my knowledge and experience of the cost to reproduce such meters as of June 1st, 1923. The figures in the columns "Cost per meter" and "Value" show that opinion. I have not included in that figure the cost of installation. This is just the bare purchase price of the meters. On Exhibit 166 for Identification in the columns headed "Cost per meter" and

"Value" are shown the market price of the particular meters owned by the Brooklyn Union on June 1st, 1923 of the sizes as stated in that exhibit.

(Plaintiff offered in evidence Plaintiff's Exhibits 150 to 163 for Identification.)

I do not know by whom the books of the company were kept which were turned over to me by Mr. Sammis and have made a check of them; we could go back as far as 1854. Up until 1906 or 1907, something like that. That is my best recollection on it, and where those books would show a main laid on Remsen Street from Court down to Hicks Street, I [fol. 650] would check such an entry. By the accumulated repair records that I started in 1910 with anything obtainable in regard to work that had been done in that particular street at any time since I have been employed by the company, all of the mains from Court Street to Hicks Street on Remsen Street have been exposed since I have been with the company. There have been several excavations along here. There was one made here a week or so ago. Offhand I could not tell you just how much; it would be impossible. The length of main required from Court Street to Hicks Street on Remsen Street is about 200 foot blocks, I should say. I have had occasion to measure one of those blocks quite recently with a speedometer, and it seems to me that I had that figure in the back of my head, that it was 200 feet. I do not just exactly remember. Those are the short blocks on Court from Remsen to Joralemon, 200 feet. From Court to Clinton Street would be about 400 feet. I did not rely upon my judgment as to the length of the mains. I took them from cards. I could not tell the length from Court Street to Hicks Street of the main here on Remsen Street. I never measured it. It might be in the neighborhood of 400 feet to a block. I would not know unless I measured it. I walk along Remsen Street every day but Sunday, and I could not say exactly how many feet of our main on Remsen Street from Court to Hicks Street I have seen since I have been with the Company. There have been various service openings made along here from time to time, and for the purpose of putting up the building in Remsen Street at 176 Remsen Street the entire front was opened at one time.

[fol. 651] (Plaintiff's Exhibits 150 to 163 inclusive for Identification marked in evidence.)

Plaintiff offered Exhibit No. 164 for Identification.

In preparing this estimate of reproduction cost I did not consult the books and records of the plaintiff company with regard to the amounts of labor and material necessary on June 1, 1923, to lay the 1¼ inch size of main, taking the first item on this Exhibit 164 for Identification. I do not think our company on or about that time laid any main of 1¼ inch size. I could not tell from memory how long prior to June 1, 1923, our company laid a main of such a size. It might have been within five years or it might have been as long as ten years ago. I really could not say when it was laid. This is an estimate of the reproduction cost new of those mains. Those mains were not new on June 1, 1923. We were laying mains on or about June 1, 1923. There may have been some temporary mains laid of the 1½ inch size. In so far as we can find them, this exhibit purports to cover all mains which the company owned, even mains which were laid back as far as 1854, and laid at different times since the beginning of the laying of the mains by the present company or its predecessor companies. Offhand I could not tell how much pavement was disturbed for construction purposes on June 1, 1923. My best recollection is there was some pavement disturbed for construction purposes around about June 1, 1923 but how much I could not say.

Defendant objected to the receipt of Exhibit 164 in evidence upon the ground it is incompetent, immaterial and irrelevant, because it affirmatively shows that this is the [fol. 652] reproduction cost of mains which are not new, although they have been estimated as new mains, and further because reproduction cost is not a proper method of estimating the value of the property used by this company in the public service.

Exhibit No. 164 shows the mains — actual use, on June 1, 1923, and does not include disused mains which may be in the street.

Plaintiff offered Exhibit 165 for identification. Same objection as to 165. Plaintiff's Exhibits 164 and 165 received in evidence, objection and exception by defendants.

Plaintiff offered Exhibit No. 166 for identification, subject to connection as to sizes and quantities of the meters shown on it.

Mr. J. A. Dykman: It is necessary for me to prove that subject piecemeal.

Mr. Deegan: I objected to the word "Value" as shown upon this exhibit, because the question of value is a matter exclusively for the determination of your Honor at first and then for submission to the Court, and the question of value is a matter to be arrived at from a determination of a number of elements.

Referring to — the figures shown on Plaintiff's Exhibit No. 166 for identification indicate, I intended to convey the idea that they were new meters on that date.

In Plaintiff's Exhibit No. 166 for identification, I am expressing my opinion of the reproduceable value of these meters, new, on June 1, 1923.

The source of my information is accumulated data in the company as to what meters have been costing over a period of years. That is just what we paid for them. I examined this data and statistics and these figures are based [fol. 653] upon the actual records of this corporation. I did not get the figures which are shown on this exhibit as the cost per meter as of June 1, 1923, from the plaintiff's books. I got them from the manufacturers of the meters, the manufacturers who make these meters, and I got quotations by inquiry from them as to the market prices of the different sizes of meters at June 1, 1923, and I confirmed that with recent purchases that we had made, prior to and subsequent to June 1st. My process of confirmation was by comparing the quotations I had received from the different manufacturers, with the actual purchases made. There is a regular list price on these meters and it is all regulated in accordance with the discounts. I would not say that those discounts fluctuate widely, but there are some changes at intervals of months, and also changes in the discounts as between competitors. I took all of that into account in arriving at my opinion. These figures represent my opinion.

[fol. 654] January 30, 1924.

JOHN T. WHITE

Direct:

In the case of the inch and quarter, the inch and a half and two inch on Plaintiff's Exhibit No. 164, they are constructed of wrought iron and steel. That is, one and one-quarter inch and one and one half inch and two inches. From three inches to forty-two inches they are constructed of cast iron, with the exception of 86,000 feet of different sizes, and they are constructed of steel. I can give you the 86,000 feet in detail if you want it. I shall give you now the distribution lines constructed of steel, from 3 inch to the largest size that we have constructed of steel in our distribution system: The 3-inch is 19,851 feet; the 4-inch is 20,308 feet; the 6-inch is 8,856 feet; the 8-inch is 2,438 feet; the 10-inch is 36 feet; the 12-inch is 4,847 feet; the 20-inch is 40 feet. There are only 40 feet of the 20-inch size main constructed of steel pipe, in the distribution system. I shall give the steel pipe used in the transmission system: The 12-inch pipe, 5 feet; the 16-inch pipe, 125 feet; the 20-inch pipe, 21 feet; which makes a total of 151 feet of steel pipe used in the transmission system. Then the rest of the pipe is cast iron. All of our services are wrought iron. The main system includes the transmission system. Starting with the distribution mains: The 1¼ inch is 1,308 feet; the 1½ is 6,620 feet; the 2 inch is 22,663 feet; the 3 inch is 271,214 feet; the 4 inch is 1,631,512 feet; the 6 inch is 2,002,242 feet; the 8 inch is 440,234 feet; the 10 inch is 131,606 feet the 12 inch is 419,032 feet; the 16 inch is 96,-[fol. 655] 164 feet; the 20 inch is 23,727 feet; the 24 inch is 11,753 feet; making a total linear feet of distribution mains of 5,058,075 and the difference betwen these figures and the figures appearing on Plaintiff's Exhibit No. 164 in the column headed "Lineal Feet" constitute the transmission mains. I have seen cast iron mains or pipe after removal from the street; mains become disused from the regrading of streets, the construction of subways and the construction of sewers, are the reasons I can recollect at the moment. I have never seen a main removed or disused because of deterioration of the pipe except in one instance. The location was on Kent Avenue about fifteen feet from Cross Street in front of the Nassau Works. The size of

the main, from recollection, was 24 inch. The cause of the removal which consisted of about ten feet of the run, was the electrolytic action that had taken place, rendering the pipe porous and unfit for further use in that particular length of the main in question. From my best recollection on the instant, it was between 1911 and 1912; when we remove mains from the street, we clean the pipe off and put it back in the yard and use it again. There must be some pipe on hand in our yards now. There is some used pipe there constantly at all times. That is a routine of the business. If often becomes necessary to increase the main capacity in a particular street. There are two ways of accomplishing that; one is by putting in a main of a larger capacity; the other by allowing the old line to remain in and putting an additional line in. I have been confronted with that question many times. It was more economical to add a new main in the same street than to substitute a larger main and remove what you call the old main. It is not an un-[fol. 656] common thing to do. We have occasions where it has been done. Our card catalog shows the number of services wholly replaced in past years. Additional consumption requires increasing the main capacity in a given street.

(Document marked Plaintiff's Exhibit No. 167 for identification.)

Plaintiff's Exhibit No. 167 for identification entitled "The Brooklyn Union Gas Company, total services in use and services replaced, with percentage relation," was prepared in my office, in my Department under my direct supervision and direction. The source of the data contained on it is the Service Repair Records of the Department obtained from the card catalogs. In the first column are the years from 1912 to 1923, inclusive; in the next column is the total number of services in use at the end of each year; under "services replaced," the figures in the third column represent the total number of complete replacements that occurred in that particular year—units of services, of service pipes, that is the number of services, irrespective of their length, and in the last column appears the percentage of the services replaced. To the total number of services of that particular year, the following pages of this exhibit show the individual services; The date of replacement, the

size of the service, the location of the service and the cause of the replacement. These services are made of wrought iron. As to the life of a service, that is almost impossible to determine. It is, in fact, impossible to determine it. I don't know the life of either the main or the service. I have seen mains and services exposed after having been in [fol. 657] use a substantial length of time; both made of different material. A very small part of our mains are made of wrought iron. Most of them are cast iron. The service does not deteriorate any more or less rapidly than the main. The corrosion of a service occurs where it is exposed to dampness or to the atmosphere. The location of a service is different from that of a main, in so far as the main is wholly covered. The service, some parts of it, where it goes into the consumer's premises, are exposed; sometimes in a coal slide, sometimes the cellar entrance, sometimes under the stoop, in that part between the courtyard and the entrance to the building, and in that way you have exposures of service pipes which do not occur at all on the main system. To a great extent, corrosion is limited to that part of the service which is exposed to the atmosphere. These facts and figures are taken from the service repair record kept in our office, under my supervision. For some reason or another, I withdraw a certain number of mains each year.

(Plaintiff's Exhibit No. 167 for identification was thereupon received in evidence).

49. Services were removed in the year 1912 or replaced in that year because of corrosion. The entire service, in these particular cases, has been replaced from main to inside foundation wall. The figure is 26. Trapped service is one that has been thrown out of line. The secret of service pipe laying is to have a definite inclination to a certain point for the purposes of drainage. The minute that definite inclination is interfered with, by possibly some other sub-surface tenants who construct or excavate nearby and their backfill sinks eventually, that pulls that service down [fol. 658] in some cases, particularly where they have been careless in their work and interfered with our sub-surface conditions, in that case we have a sag in the line. That accumulates water and shuts off the supply and, in cases of that description, we have to go there and replace it. In that

case there would be nothing the matter with the service itself, it would be the act of some third party. In some cases, that involves a new service, because it is more economical to have a straight line right through and have a perfect service right to the premises. It works better and as a result in conveying the gas it is better, and while we are there we take the opportunity of assuring ourselves that every thing is all right, so that we can give perfect service to the consumer. In some cases, possibly the service, where it has been exposed in the cellar or at some point of exposure, probably in a coal slide, like the coal slides here, is corroded. There is no other reason, no other condition that would lead to installing a new pipe that I can think of at the moment. These services are mostly 1¼ inch pipe. That pipe is not in shape, irrespective of corrosion or anything else, after I have pulled it out, to put it back. It is of course bent and sometimes the walls of the pipe are collapsed, they come together by reason of this sag in the line. At other times it might be almost broken through, the metal might be cracked or almost broken through. There are various conditions that you would encounter there, that are kind of hard to recollect at the moment, but they all occur by reason of the peculiar locality or the action the pipe has been [fol. 659] subjected to. For that reason, the very process of removal renders it unfit to replace the same pipe, irrespective of whether there is any corrosion. These services which are down on this exhibit as trapped come within that category.

"Account of Subway" is very likely subway construction of some sort or some subway repairs that it was necessary to make and where it was necessary to take the service out of the way temporarily and had to be put back again. Removal would be the same process.

"Change of grade," means that the roadway has been improved, the street or roadway has been graded and in that case why, it was necessary to remove the service temporarily, but this in many instances would be a temporary supply, and, upon the completion of the grading, reestablish your supply in a permanent manner.

On page 2 of 1913, down toward the bottom of the page opposite "#327 Livingston Street," the word "alteration" and on the same page opposite "#353 Snedeker Avenue"

the word "alterations" might mean and very likely is a change of the building, changing it from possibly a private house to a store, which frequently occurs in different parts of the territory and, in that case, they would alter their house piping. In other words, they would bring the riser of the supply, that supplies the house, down at another point. In order to reach that riser when it is changed, why, we put in the service at a different point of entrance in the building. The reasons which I gave with reference to a trapped service—that is, the effect of removal upon the [fol. 660] pipe itself, apply to all these cases of alterations and subway work, and so forth. I used the same process of removal in all cases. Exposure to dampness and the electrolytic action cause the corrosion of a service generally. I have noticed that in ash fill corrosion occurs quicker than in sandy fill or clay soil. I have recently estimated in the course of my duties on a run of 30 inch main; that was in the spring of 1923. It was for the completion of the 30 inch loop that encircles the system of the Brooklyn Union Company and its subsidiaries. It covers or did cover about five miles of 30 inch pipe, the construction and connection to the part of the loop that had not been completed up to that time. Prior to this construction I personally made estimates as to its cost of labor and material. I supervised the construction. After the installation was constructed, I checked my estimate with the actual cost. I made a written estimate.

(The piece of pipe was thereon marked Plaintiff's Exhibit No. 168 for identification.)

Plaintiff's Exhibit No. 168 for identification, which appears to be a piece of pipe, I have recently seen it taken from the ground. On Monday, January 28, 1924, it was taken from the ground at Stagg Street, north side, 101 feet west of the west curb of Lorimer Street. I was present when it was removed. Prior to its removal, it was serving consumers in the line that runs along Stagg Street in this particular block between Lorimer Street and Union Avenue. This was part of a main and not a service, now serving consumers. The size of this pipe is 4 inches in [fol. 661] diameter. On January 28, 1924, it was part of

a four inch main in Stagg Street, in use serving consumers. This removal was made at your request. I chose the location by going to one of the oldest record books we have which is Exhibit No. 150, and turning to page 13 of that book. I just opened the book and put my finger on the place, because the main was laid in 1858, and picked out a location under 1858 in order to get one of the oldest mains that we could for this purpose. I did not have any knowledge of its condition before the removal. The technical name of this end of the pipe to which I point is the spigot end. Nothing has been done since removal to the spigot end of the pipe except to take out the lead and the yarn at the time the bell was removed from that spigot end. For a short distance away from the spigot there appear to be incrustations on the pipe. This is incrusted portion as it was when it was removed from the ground. We merely cleaned it off there and removed the rust accretions and the earth accretions with a wire brush. The cause for the pipe appearing to be broken or chiseled occurs in breaking the pipe through. We first have to use a diamond point chisel in order to make the cut of one or two inches, and after that is made right through the wall of the pipe, we then introduce a wedge and strike that wedge a sharp blow and that extends the crack right around the circumference of the pipe. This uneven end at the opposite end from the spigot end is due to the breaking off of that length. The bell or the hub of it covers that portion of the spigot end except for the removal of yarn or whatever [fol. 662] I have mentioned, which was in there to fill it up, I have done nothing to this end of the pipe. Looking at the end away from the spigot end, that is, the broken end, this is generally understood to be the original mill scale. That occurs when the pipe is cast and cooled off. This particular piece of pipe was laid in 1858. The month does not appear. I found inside this pipe at the time of removal an oily deposit around the interior, and that has been allowed to drip out for purposes of cleanliness. So it would not fill the room with a very objectionable odor. This is just part of it. That pipe was not supposed to have a uniform thickness. In the old style casting, in those years I have found, in going over the old data, that it was

cast in a horizontal position instead of like the pipe is being cast now, on the perpendicular. For verification of that fact, you will see where the two sections of the pattern of the pipe appear (indicating on diagram). That is a seam. Now, the modern pipe of similar sizes is cast on the perpendicular and there is no seam there. It is smooth right around. The cast, by the indications was in half cylinders. That was the general way of doing it years ago. At the present time there is no seam on the side, and the thickness of the pipe is generally uniform. At one side, the thickness of the wall of that particular exhibit, uniform at the present time, disregarding irregularity at the point where the seam occurs, is thinner than the other. I have no means of knowing whether that was so when the pipe was new or not, except from my knowledge, acquired over thirty-eight years' experience in pipe laying and pipe purchasing, I have found that in all pipe that was cast under [fol. 663] this condition, that difference does occur. I do not attribute the irregularity in thickness of wall to any corrosion during the years that it has been in use or any other cause. It is not the deterioration of the pipe during those years. I would state that that difference was existing when the pipe was laid, because of the circumference of the pipe right at that very thinnest portion, there remains still the mill scale of the original casting. My knowledge of the interior of the pipe, as to what passes through it, and at the time I took this particular piece of pipe out of the ground it was surrounded with an oily deposit. In almost any case of a gas main you will find that oily deposit, and that acts as a preventative of corrosion; it is absolutely impossible to have corrosion exist and continue where that oil is. It is protected on this side by the oil and on the circumference of the pipe the original mill scale still remains, showing that no rust has penetrated the original mill scale. You couldn't put it on; we don't go around putting mill scale on it after we buy pipe, because we could not do that. I recognize that as being mill scale which was put on at the time the pipe was cast. The term "mill scale," is a condition of the metal that occurs in cooling. You can see there that that scale is right over the center circumference of the pipe, in the same

way it is on this side. Now, this scale is caused by the sudden cooling of the pipe and contraction of the metal, I assume, and it is evident in all pipe that you buy. You will always find this scale. This is cast iron. These little [fol. 664] black marks here, you see that shiny surface there, that is the original mill scale. If that scale should come off, you would find it rougher underneath. It is perfectly smooth on this other side. Here is a place where it is a little bit pitted. That scale seems to be a very thin film of metal. I could not estimate its thickness; it is too thin. I spoke a while ago of putting back into my storage pile pieces of main removed from the street. Those pieces of pipe put back and actually used again do not differ in any respect from this piece of pipe which has been marked Plaintiff's Exhibit No. 168 for Identification. This piece of pipe is my opinion is fit for use. I got the date when the pipe was installed, this particular piece of pipe from Exhibit No. 150 in this case. I went right through this record book according to the index to see if there had been any changes to the particular point where I contemplated cutting this exhibit, and I found there were none indicated. These records, are the old records when I came to the company, handed over to me and which I tabulated in the card index. Then I went to my card index to see if there had been any repairs made at that particular point and I found none. The particular card of the card index in Court, which records the history of this particular main is not in Court. It is available: I will produce that. That card would have the data concerning a removal of a main, if it had occurred. It would have the data concerning a disused main, and it would have the information as to a new main being laid at this particular point, but if a repair was made [fol. 665] at that point, it would not have it. Those repair records are operated independently of the repair book. I did look at that. The repair book containing such entries as would disclose whether or not there was a record of the repair to the mains from which this exhibit was taken at this point and, if so, when such a repair was made is available. The repair sheets are loose leaf and are finally bound in a folder. Now, we would have in that shape repair records from 1910 or probably 1911, when I started

that new system of records that I testified to, up to the present time. Prior to that you would have to get the foreman's labor and material tickets, and they of course would fill this form out for a number of years. I did look through that to see if this pipe had been repaired since it was laid, prior to 1912. The records prior to those records which I say commence in 1910; back of 1910 the records consisted of the workmen's work sheets. There is no repair book back of 1910. From 1910 down to date I tabulated all the pipe which would enable me to determine whether or not there was a record of a repair to this main at that point since that time, 1910. I have consulted that and I found no such entry, from 1858 to 1910. For a great part of that time, the records of repairs were not available. I think I can go back to possibly 1900. For 10 years from 1900 to 1910 there is some record available. Some ticket of material which may be turned in by a foreman. I did not consult that. There is nothing between 1858 to 1900 in the way of a record, to enable me to deter- [fol. 666] mine whether or not a repair was made to this particular main during that period. No data. The condition of the pipe, as to its location in the street, and the fact that the pipe for its entire length has not been disturbed and showed no evidence of disturbance in the joint, between the hub end and the spigot end. In addition to that, one foot from the end, the spigot end here, right near the hub that was broken, is a brass elbow coming out of the main, which was not used for over thirty or forty years, according to the history and the knowledge of some of the older employees whom we have in our organization, forty years last past. There is no data, but a physical inspection of this main when exposed that gave me certain evidence of antiquity. In my direct examination about the method of casting this pipe, I also said that that indicates age, also the method of casting. It is the old method as compared with the more modern one which was adopted probably fifteen or twenty years ago. They changed the method of casting some fifteen or twenty years ago, to the best of my recollection. They poured the metal with the core in a perpendicular position. With this one, the metal is poured with the pattern in the horizontal

position, making a half cylinder. It is my best recollection that the method of casting was changed from the horizontal to the vertical fifteen or twenty years ago. It has not been adopted within the last three or four years.

Plaintiff's Exhibit No. 168 for identification offered in evidence.

Objected to.
Exception.

[fol. 667] I cannot testify positively that this pipe was not laid at any time from 1858 to 1880. My knowledge of the fact and the practice and the condition of the pipe when exposed by the excavation; I did not see it laid, that is quite obvious.

The person who told me it was the custom to attach a brass elbow, 30 or 40 years ago, was an old laborer, Mr. Beck, who had been in our employ for quite a long time. He is dead, he died about a year ago. I have been in the habit of talking over old time practices with old employees, so I could get a line on the ideas and the style and method pursued in those years, for the purpose of becoming generally familiar with such questions, and in that way, I obtained that bit of information. In my experience I have never used any such brass elbow which goes back over 38 years.

Plaintiff's Exhibit No. 168 for Identification was thereupon received in evidence.

I would have to take or refer to the old records, if you will permit me, Exhibit No. 150, which I think is the first record we have here. I would not be able to determine whether or not the pipe had been repaired or replaced prior to 1900. There are records that would enable me to determine whether or not a given main had been replaced or repaired between the date which I find in these records, as to its installation, and the year 1900. That will give me the fact whether there has been a new main laid there or the main has been replaced, but there are no records [fol. 668] prior to 1900—going back to 1858 in this case—that will give you the repairs that may have occurred at that point. I do not think you can go very far back of 1900, except from those material and labor reports.

Cross:

The cost of pipe per foot, of 6 inch size, is $1.0040; joint material is $.0547 per foot; specials, valves and valve pits $.0835 per foot; the bed blocks, $.0058 per foot; incidentals, $.0594 per foot; making a total for the material of $1.2474 per foot. We then go into the labor of laying the 6-inch pipe: The cartage is $.06 per foot; yarning and calking is $.0729 per foot; blocking, placing and levelling is $.0382 per foot; excavation and back fill is $.8719 per foot; hauling and dumping the surplus dirt does not occur in 6 inch size, but occurs in other sizes from 10 inch or 10 inch and higher; city inspection for 6 inch size is $.0226 per foot; foreman, watchmen and water boys is $.1157 per foot. The total labor for 6 inch pipe is $1.1813 per foot, making a total for material and labor of $2.4287 per foot. The cost of the 12 inch pipe is $2.5012; joint material is $.1296; specials, valves and valve pits, $.2001; bed blocks $.0088; incidentals, $.1420; making a total for the material of $2.9817. The labor for the 12 inch pipe Cartage is $.1480 per foot; yarning and calking is $.1458; placing, blocking and leveling is $.1337; excavation and back fills is $1.3781; hauling and dumping surplus dirt is $.0486; City Inspection is $.0226; [fol. 669] foremen, watchmen and water boys is making a total for the labor of $2.1197. The grand total will be $5.1014.

The cost of 4 inch pipe is $.6802 per foot; joint material, $.0449; specials, valves and valve pits, $.0544; bed blocks $.0049; incidentals, $.0392; that will make a total for the material of $.8236. The labor on the 4 inch pipe is as follows: Cartage, $.0380 per foot; yarning and calking, $.0583; placing, blocking and levelling, $.0267; excavation and backfill, $.8438; City Inspection, $.0226; watchmen, foremen and water boys, $.0907; making a total for the labor of $1.0801. The grand total is $1.9037. I have estimated the cost to reproduce this main and system as of June 1st, 1923 and the main system consists of about 1,017 miles, and that would be an enormous job. I am constantly laying pipe all over the territory, say, ten miles of pipe at one time. The longest length of pipe I have ever laid since I have been with this company, was between ten and twelve miles, tak-

ing just one job. That was the 30 inch, the line, part of the loop that goes from the Scholes Street Station right up to the Newtown holder. I laid that in 1911 or 1912. It would take to lay 1,017 miles of pipe—the shortest time that you could conceive of—here in Brooklyn, it could be accomplished in two years. I assume that we would buy pipe from the pipe people who have it to sell, that it would be loaded onto freight cars and part of it would be stretched on the streets, such part as the City authorities would allow us to stretch on the streets, which of course is limited, and [fol. 670] the surplus which we would have to have ready as the work progressed we would put in storeyards pending the time of its use. In regard to the actual conduct of the work I assumed storeyards and housing facilities for the organization to handle it, and sufficient men to accomplish the job within the period I have stated. It would take about 40 gangs consisting of a certain number of men, approximately in the neighborhood of 2,400. That is, when I tell you that or give you that figure I am giving you a figure from the foreman of the gangs down, in rate rating, and leaving out of that answer the organization number of men to supervise their activities; everything below the grade of a foreman. I am going to dig the trenches by hand, even to the 12 and 16 inch sizes. I would not use an excavator because of sub-surface conditions, and in addition to that the use of an excavator in the last analysis is not any more economical than hand labor, as labor is paid nowdays. The cost of the operation of your apparatus about equals the cost of hand labor, if you can get the hand labor. In our outlying territories there are some obstructions, sub-surface obstructions, that you could not operate an excavator with any degree of success, without additional expense, on account of the removal of conduit lines. There are some out that way; and there are always water mains and water services. The bell hole dimension would be 4 by 4; that part of the trench outside of the bell hole would be 8 feet long and 2.33 feet wide. That portion back of the bell hole, not in back of the bell, but back of the bell hole. Assuming all [fol. 671] pipe 12 feet in length when laid, and I am handling the practical method of accomplishing the laying of that pipe and the general practice of digging or excavating for the installation of that pipe in the ground. The width

of our trench for the 6 inch cast iron pipe would be a bell hole of 3 by 3 and the part of the trench taken up by the other end of the pipe would be 9 feet long and 1.83 feet wide and our 4 inch pipe would again have a bell hole of 3 by 3, with 9 foot length of trench outside of the bell hole, and 1.83 feet wide. All of this is practically hand work. On our sizes, above 10, I think, I would have to make away with the excess dirt. From 10 inches and above there would be hauling and dumping of the excess dirt. In case I put in a pipe 10 inches in diameter I expect to haul and to dump that dirt to the nearest dumping point. It is generally about a mile and a half or two miles, as an average proposition. That dirt was to be hauled by motor vehicle, motor dumper. I allowed one cubic yard each, each load, costing $1.3814, per cubic yard for hauling this mile or mile and a half. The maintenance of a motor dumper costs $1.84 per day. That is the cost of it. The wages of the driver cost $4.21 per day. That of the laborer filling the cart cost $5 per day that total makes $11.05. The number of loads per day of one cubic yard each under favorable conditions is eight which will average $1.3814 per cubic yard. I have not any particular place in mind where they were going to dump this except my general knowledge of the dumping facilities that prevail in this territory, which I have learned from actual practice working in it. That [fol. 672] is, in my experience I have always been able to find within a mile and a half a place to dump this excess dirt, within a mile and a half or two miles we are generally lucky enough to get some place. In most cases of my experience here in the Brooklyn Union territory we have had to pay for the privilege of dumping, although I have not assumed in here a cost of paying for the disposal of it, outside of the actual actions in disposing of it. I have not in our unit price any figure for the leasing of any land, the dumping privilege; none of the contractors do any of our main laying. We do it all ourselves. Some of the other companies employ contractors. The Kings County Lighting Company and the New York and Queens Company, I am not so certain about the New York and Queens. I mean the Flushing Company.

The price of cast iron pipe, six inch pipe, on June 1, 1923 was $69.60 per net ton. I got that price from my knowledge

of the market, by buying pipe over a period of years using the same methods in arriving at it, by consulting purchases we had made, and the general looking over of the market at or around that date. I made some inquiries of the pipe people as of that date. That was included in the general inquiries that I mentioned. I inquired of the John Fox Company the Warren Foundry & Machine Company, and the United States Cast Iron Pipe & Foundry Company. I made those inquiries a short time after June 1. I told them I wanted their quotations of the market prices as of June 1, 1923. I made the inquiry right after June 1, a little time [fol. 673] after June 1. I cannot tell you just about the exact day I inquired of them. I do not remember it. It was during June. I asked them for quotations on pipe at June 1, 1923. I phoned most of them; all of them. We buy our pipe probably about the end of the year, usually during October or November or December for the next year's requirements. In this case we did buy a large lot, but this was an exceptional case. In July 1923 I bought 622 tons of 6, 8 and 12 inch pipe. I have not calculated how many tons of pipe there would be in the company's 1,017 miles of pipe. On June 1st, 1923, for 3 inch to 42 inch pipe the cast iron people asked $78.60 a ton; 4 inch $71.60 a ton; 6 inch $69.60 a ton; and from 8 inch to 42 inch $67.60 a ton. That is the information I got from the pipe people with verifications from other sources. The Warren Foundry Company gave me a quotation somewhat the same, from memory. I don't recollect exactly what it was. My best recollection at the time was that The Warren People and United States Cast Iron Pipe & Foundry Company were somewhat the same—quite close. The John Fox Company gave me similar information. The market price is the market price, and you cannot get back of that. If you ask all these fellows on the same day they will all practically give you the same information, because they are governed by the market that exists at that particular time. I could not recollect and give you the exact prices they quoted. This was a telephone communication, and I made a memo of it on a scratch pad and used it at the time for what it was worth for all three of [fol. 674] them. This is not the quotation they all gave me. This is what I arrived at as a result of my investigations of the market at that time and my knowledge on what I had purchased for the company just prior to that and recently.

I did not take into consideration or adopt the prices that any one of them quoted me. I did not reach that in any such way as the Court reaches fair value, by taking into consideration all the elements. I gave the result of our conclusion after taking into consideration the quotations, but I do not remember exactly what they quoted us. Some of those quotations are printed in a price-list. The Iron Age gives some quotations on cast iron pipe each month. It is a publication that aims to give that information; just how reliable it is I cannot say. It is a trade journal. I find the quotations higher than given in the Iron Age. In this very period that we are talking about now, around June 1st, they gave a quotation which was lower than the market quotations. In this particular instance I found them unreliable and any other I did not pursue the investigation of to the end. But in this instance I found they were not reliable and that their quotations were low and the information that I had obtained by buying pipe in large quantities, and the quoted costs or prices that had been given me by people who are engaged in the business. I brought this to the attention of the Iron Age. They acknowledged that they were wrong. The acknowledgment was all that I was after. I have not looked in the annual that they have just gotten out. I think they get out an annual in January of each year show- [fol. 675] ing the quotations on cast iron pipe, throughout the entire year, and the sources of that information. I asked these people about the market quotations. I did not mention this thousand miles of pipe that I expected to buy to build this distribution system and said nothing whatever about that. In making our annual purchases I negotiated upon quantity and time of delivery. I never found that the prices varied dependent upon the quantity and time of delivery. They generally hold steady to the market. The market at the time of inquiry would be the controlling factor. I think the price would be the same in each instance. When I make these usual purchases in December for delivery during the next year, an order is placed with them, and there is no particular date as to delivery, except to know that we will get it within the year. We are subject to the production of the foundry and their ability to give us the pipe at least within the year. It is delivered when we call for it, and we have to wait until we get it. I do not know how much pipe we ordered in December 1922.

In December 1923 we ordered four thousand three hundred and two tons. Fifty six dollars per ton for the 20 inch and the same price for the 30 inch. I can conveniently find the quantity, the price and also the size of the pipe ordered in December 1922. If they really knew we were in the market for a thousand miles of pipe, I have an idea that they would confine themselves to the market quotations. If it got noised around that we wanted a thousand miles of pipe there might be some pipe representatives who would be after us wanting to sell us those thousand miles and there [fol. 676] would be real competition among them. I have no idea what quotation I would be given or what my final purchase price would be for that amount of pipe, assuming an imaginary condition. There are some known facts. We are not going to rebuild this distribution system as of June 1, 1923. We have not as yet nor do we expect to. Cast iron pipe was selling in the neighborhood of $22 or $23 a ton, or something like that on January 1, 1914. It was selling in October 1919 for almost three times as much, that is it got up about October 1st, 1919 to somewheres around from $58 to $60. In 1920 it ranged from $73 to $76 a ton; in 1921 it ranged from $68 to $60 a ton; in 1922 it ran from $52 to $54. These are very rough approximations I am giving you, and I am relying on my memory to a great extent. I usually get that data from my memory, with the purchases made the *the* market quotations. I have not reached the real high point. In 1920 it has reached I think, $70 to $60 or $76 to $60 or something like that. I am giving you now the purchases that were made at the market quotations. There is a combination there, and in some cases, from memory on that I should change that from $76 to $60 and a little lower than that, I should say from $70 to $60. I think that is a little in excess there. That is dollars per net ton. I then went down from that price to a low price in 1921. I do not know how low, about $55 or $56. I am still relying upon my memory to a great extent. I have some figures here, but nothing that would control my answer, except to give me an idea of the purchases that were made, that is all, and I am adding to [fol. 677] that mentally and giving the result. I made some purchases during 1920; just when I could not tell. I have not got that data. I made some purchases during the year of 1921. There again I could not give the month,

but I assume that they were in accordance with our usual customs, sometime in December, for the following year, 1922. I could not answer that. It is not my recollection, that pipe reached $77.22 a ton in 1920 and went as low as $46 in 1921. In 1921 it was higher than $46, in the neighborhood of $54 or $56. I am familiar with the quotations all the time. I am constantly looking around and watching the market and directing the purchase of pipe for our people. I would say it is some indication of the trend of prices. I cannot, without going back and freshening up my recollection, say whether that is in accord with my experience and knowledge on the subject at this time.

In January 1923, we ordered 20 and 30 inch. I cannot recollect if there were any orders placed in November, 1923. I have no note of them. There were some placed in December 1923. I have no information as to what I ordered in December or November 1923. In December 1923, we ordered 5,265 tons of 4, 6, and 12-inch for the requirements of 1924. The price for 4 inch pipe was $71.60 a ton; the 6 inch was $66.60 a ton; and the 12 inch $66.60 a ton. I bought that pipe from the United States Cast Iron Pipe and Foundry Company. I occasionally make purchases of the Warren Foundry Company. I think we have made some within the last two or three years. I do not give the bulk of our business to the United States Cast Iron Pipe & Foundry Company. Whom we award the order to is decided on competitive bids received and, all [fol. 678] things being equal, why, the lowest figure is taken. We send an invitation to bid on our requirements for the succeeding year and then they submit written proposals. I do not think I stated what was the price of cast iron pipe on October 1st, 1919. It was around $60. Around January 1st, it was somewhere around $66 and $67. The purchases of this pipe are made from the New York office of the foundry, that is the bids are issued from there and we receive it from that quarter. They quote us prices at the foundry plus the freight. The United States Cast Iron Pipe Company have foundries at two points in Pennsylvania. I know the names of the towns but I cannot recollect them for the moment. My best recollection is somewhere either in Pennsylvania or New Jersey, I am not sure

now which. They are widely separated from each other either in the eastern part or western part of New Jersey or Pennsylvania; they are separated from each other. The price would not vary in accordance with which foundry supplied you. Plus the freight, the price on the ground would vary according to the distance carried. To some extent, our cost, actual cost of pipe on the ground, depends to some extent upon which foundry our pipe is shipped from. I took the lowest freight rate that I knew of and used that. That was a figure of $2.60 a ton. That was from one of these points of the United States people. That freight rate was in June 1st.

The foundries of the Warren Foundry Company and the John Fox people are located in Pennsylvania. I cannot recollect the town. The time I was making this up I had all these different points where the foundries were located. [fol. 679] I adopted the lowest freight rate and looked up the freight rate to each one of these various foundries, not only of the United States Cast Iron Pipe Company, but also the other, the Warren Foundry and the John Fox people, and came to the conclusion that the freight rate from some point in New Jersey was a foundry operated by the United States Cast Iron Pipe people. I thought that was the cheapest freight. The market price that I considered in the reproduction cost was $78.60 for 3 inch pipe; $71.60 for 4 inch pipe; $69.60 for 6 inch pipe, and for all sizes higher than 6 inch, $67.60. In December 1923 we paid on the order of $71.60 for 4 inch; $66.60 for 6 inch and the same for 12 inch. The pipe foundries of the United States Cast Iron Pipe Company are located at Burlington, New Jersey, and Scottsdale, Pennsylvania, and the John Fox people are located at Emaus, Pennsylvania, and the Warren Foundry Company is in Phillipsburg, New Jersey. That differential varies from $7 to $10 a ton between 3 inch and 4 inch pipe, for different sizes between 3 inch and 4 inch. That differential has been in effect for at least ten years to my knowledge. The differential between four and six varies from $3 to $5. Those differentials have been in effect for years, not all sizes, up to 6. It is my recollection that the differential

between 3 and 4 inch has been seven to ten dollars for a number of years and the differential between 4 and 6 inch has been from $3 to $5 for a number of years. Our differential on June 1, 1923 between 4 and 6 inch is $2; it is $2 instead of $3 at this particular time. The differential between 3 and 4 inch is $4, and the differential between 4 [fol. 680] and 6 inch is $3 and has been so for years. That largely depends on how you purchase it, and where you get it and the particular time the purchase is made. That differential is subject to some changes, but what you say is generally so. That differential is fairly constant, and has been so. These pipe prices are estimated or based upon Class B water pipe. There is a differential between Class B water pipe and gas pipe, and that is generally considered a constant factor. I suppose it all depends on the fluctuation of pig iron, but I don't know. I got this $1.04 per foot for our 6-inch pipe from the 12-foot lengths, when laid, with 3½ inches of a spigot end to go into the hub, 3½ to 4 inches, according to the depth of the bells using the American Gas Association's specifications. Our price per ton of 6-inch pipe on June 1 was $69.60, plus the freight. I got $1.04 from that figure by reducing the cost per ton to the cost per pound and multiplying it by the number of pounds in a foot. I assumed thirty pounds was in a foot of 6-inch pipe and nineteen pounds in a foot of 4-inch. I used throughout our computations the American Gas Association's weights. There is a fluctuation of five per cent in the weights of pipe permitted in the standard and specifications. There has been no change in the weights of pipes since that standard was adopted. I do not think there is any change to any great extent in the weights of pipe at the foundry, since, say, fifteen to twenty years ago. In other words, the foundries are not overcoming that variation in weights or variability of weights. * * *

[fol. 681] I didn't take into consideration the breaking of the pavement. Our prices are practically on unpaved streets. I don't figure how many cubic yards could be excavated by one man per day. I take the cubical contents of displacement and apply the time necessary to make that displacement by labor. I adopted a certain amount—because in my

experience the cost of a cubic yard of excavation was $2.8125 [fol. 682] per cubic yard. $2.81 per cubic yard for excavation. That would apply on any street that is unpaved, and that is for hand excavation—just by the ordinary pick and shovel method. On our six-inch pipe, .0547 for joints was the material. That is lead and yarn. .1175 for yarn, and .58 for lead. Take one-twelfth of that and that will give you .0547, that is about 5.5 cents a joint per running foot of main, for the joints, 12 feet apart. I am referring to some working papers gotten up for this particular case. That lead and yarn is caulked in this joint. First the yarn is driven in and then after that has been put in about two inches of the depth of the bell, the lead is poured over it. The lead is the lock that holds the yarn in position, and the yarn is what makes a joint gas tight. The lead locks it, holds it in position. That is the price of material only. The price of lead as of June 1, 1923 was 7¼ cents a pound. I assumed eight pounds per joint. That would be one-twelfth of eight pounds per foot. I have not corroborated Mr. Cummings' mathematics. 8/12ths of a pound is not ¾; it is nearer ⅔. That is .66⅔, the lead per foot. Sometimes we use lead wool in joining pipes. It is the practice of our company to use it on the transmission system in most cases. In making up our data, I have not assumed the use of lead wool, not even on the transmission system; lead wool is more expensive than this. In all cases I took the cheapest thing—pig lead. It has not been our practice to make the [fol. 683] joints by cement. I would not say that it is the modern practice. It has been done in some of the large cities, I would not say recently. I know of a large line in Philadelphia that was laid that way some years ago. It is quite a considerable time now; six or seven years ago at least, maybe longer than that. The price of the yarn I assumed was .1175 per pound. I allowed .81 of a pound per foot.

The specials, the valves and the valve pits, I assumed as 8 per cent. of the cost of the pipe, and just took the valves and the valve pits and the specials at 8 per cent. Where I estimate on a large job, I always assume 8 per cent. for specials, because specials, valves and valve pits generally occur in all of the system. If I were estimating on a small job of two or three or four hundred feet. Of course I would

leave them out, because it does not actually occur in that three or four hundred feet. I would ascertain the specials with precision in making our estimate. Here we are dealing with averages of the entire system—in the Brooklyn Union alone specials average about 8 of the cost of the pipe. The specials, the valves and the valve pits, do, in my experience, average about 8 per cent. of the cost of the pipe.

Bed blocks are the blocks I put under the pipe, around the bell and just back of the bell. Spruce bed blocks and oak wedges I assumed would be used—wedges for the larger sizes.

Incidentals takes in 5 per cent. of the material and covers shoring, pedestrian bridges, vehicular bridges, railroad [fol. 684] crossings, supporting trolley lines, red lanterns, oil, waste, red lead, boiled oil, ditch line, guard bars, wooden guard horses, coke, ice, delays, petty cash, carfare and telephones, gauges, cartage of tools and implements, portable shanties, tool carts and small fittings. A ditch line is that line of rope that you put across when you put up standards, stick standards in the ground to hook the rope onto, in the nighttime you hook red lanterns onto it, in the daytime, you put the guard line across so people who are inquisitive won't fall into the opening. That is what incidentals are, it is 5 per cent. of the material, and that covered all these items I have just mentioned. I took a certain percentage, like I did on our specials, not quite 5 per cent. of our pipe and joint materials and our specials and our bed block. On the specials, the valves and the valve pits, I took 8 per cent. of the cost of the pipe. That is the only material cost that enters into the specials, valves and valve pits. For the incidentals I took 5 per cent. of all the material that goes before it, which includes the cost of the pipe, the joint material, the special valves and valve pits and the bed blocks. The cartage and labor—the total of those items, our pipe and joint materials and special bed blocks and incidentals amounts to $1.2474,—that is the total of the material cost. The cartage is 6 cents a foot. That signifies cartage of material onto the job. That is the delivery of the pipe and specials and all other material on the job except the smaller [fol. 685] stuff. That is based on our experience figure of .002 per pound. On many experiences that I have had in cartage covering the term that I have served in this terri-

tory of over 13 years, many of these jobs of handling a large amount, tons and tons of material, and the cost of it, reduced down to a per pound basis. I did not consult records. I drew that out of my experience of what I know as to the cost of doing that kind of work, of carting.

(Book marked Defendant's Exhibit No. 2 for identification.)

Referring to Defendants' Exhibit 2 for identification, known as the main map of the Brooklyn Union Gas Company,—on one side of Fulton Street, between the points mentioned, Prospect Street and Furman Street, there is a 4 and 8-inch main. On the opposite side there are two 6-inch mains. I do not know how many mains there are in that part of Fulton Street from memory. I did not go down there and count them. My knowledge is derived from the records, and such times as I have seen the mains exposed. I cannot tell you how many mains I have seen exposed in that part of Fulton Street; I have seen them exposed at different times, but how many I could not say. I have no record of what I saw when they were exposed. I know that at certain times during the course of repairs and changes and the installation of service pipes and the repair of service pipes at certain points in Fulton Street between those points these mains have been exposed, but it is beyond human ability to memorize over a thousand miles of mains, particularly those in even one or two blocks.

[fol. 686] I took some ancient records of this company with reference to this data and classified the same as the basis of a card index system; and thereafter as these mains were exposed I obtained some personal and original information concerning the streets and the mains here and there and elsewhere, and noted that information upon this card system, sort of supplementing it. Every repair record and every installation record has given me an opportunity to view them and I have viewed many of them. In the card system is a memoranda that would enable me to state what I have seen there and what I know about the number of mains in that part of Fulton Street. It is not here in the court room. With the card system before me I would be able to testify, after refreshing my memory, what mains I have seen in that part of Fulton Street, that I

know exist. I can not give you the actual distance between the two-inch mains on the westerly side of Fulton Street between Prospect Street and Furman Street, except to say that they are in proximity to a degree. Just what actual distance there is between them, on account of the fine lines and the inability to scale the space between the lines—why, it is almost impossible to do that. The card index, which is now in evidence, will show the distance of both of those mains and all of those mains from the curb. Some of our records will show the distance. I would know the actual location of the six-inch main which is nearest to the centre of the street by reference to the intersection cards or some re-
[fol. 687] cent repair records of work that has occurred in that vicinity, as shown in this card index. It would have to be repaired or exposed during the life of our card index, in order for me to have that data, unless there is some of that information contained in the old books, Exhibits Nos. 150 to 163.

Defendants' Exhibit 2 for identification received in evidence as plaintiff's Exhibit 169 and card index of mains and services considered in evidence as Plaintiff's Exhibit 170.

[fol. 688] Brooklyn N. Y., February 1st, 1924.

JOHN T. WHITE

Cross:

I have the record of the last hearing with me. On page 1,733 of the copy of the mimeograph record Mr. Dykman asked me what material the mains appearing on Plaintiff's Exhibit No. 164 were constructed of and I stated they were constructed of wrought iron. Just subsequently I stated: "From three inches to forty-two inches they are constructed of cast iron, with the exception of 86,000 feet of different sizes, and they are constructed of steel," and then down at the bottom of the page I say "I shall give you now the distribution lines constructed of steel, from 3-inch to the largest size that we have constructed of steel in our distribution system." The wrought iron mains are the 1¼, 1½ and 2-inch as they appear on Plaintiff's Exhibit No. 164.

The 3 to 42-inch are of cast iron, with the exception of 86,000 feet, in round figures. With the exception of the parts that I testified to at the last session. There are some 3-inch to 20-inch of steel, as shown on page 1,734 of the mimeograph record and those are all steel mains. We have not any wrought irons mains of a size larger than 2-inch.

The 86,000 feet that I testified to, from 3-inch to 20-inch are wrought iron. I have made an error in my statement, I see that I have inadvertently added in the wrought iron with the steel there, and that should be reduced by the number of feet of wrought iron that is on the tabulation. The [fol. 689] 86,000 feet includes the wrought iron and the steel. On page 1,813 of the mimeograph record, at the bottom of the page I was asked this question: "How much pipe did you order in December, 1923," and my answer was "4,302 tons." I was asked "At what price?" and I said "$56 a ton." On page 1,823 of the record I was asked, "What did you order in December?" and my answer was, "In December, 1923, we ordered 5,265 tons of 4, 6 and 12-inch." We ordered 5,265 tons in December, 1923. My answer to the question on page 1,813 of the mimeograph record is incorrect. Inasmuch as it does not give a sufficient number of tons. I made a mistake in my addition there before, presumably. I was referring there, when I answered that question, to the 20-inch and 30-inch which we had purchased at $56 a ton in January, 1923. That was almost a year previous.

Referring to page 1,823 we were able to buy pipe in December 1923, the December last past, at $66.60 a ton, 6-inch pipe. The 4-inch pipe was $71.60 and the 6-inch pipe was $66.60 instead of %60.60 as it reads here. In other words, it is the same price for the 12-inch which immediately follows it, $66.60 a ton. In this quotation there is no differential in sizes above 6-inches. That has been true for the last few years. That differential question is a very involved one and it has changed; that is, the amount of differential has changed over a period of years, and it is almost impossible for me to definitely commit it to memory, I cannot recollect any differential existing in sizes above 6-inch pipe at this time.

[fol. 690] It is true that we were able to buy pipe $3 a ton cheaper in December, 1923 than the price which I have adopted in my schedules here. According to my best judgment, the value of cast iron pipe receded in so far as 6-inch pipe was concerned, from $69.60 to $66.60 between June and December.

On page 1,833 of the mimeograph record where I was asked, "What was your price per ton of 6-inch pipe June 1st," I answered "$69.60 plus the freight." That should be "including the freight," not "plus freight," and I think I testified that way. The freight is $2.60 therefore our price at the foundry was $67. per ton. My recollection is not any better this morning concerning the prices of cast iron pipe that were given to me by the pipe companies. It was in the vicinity of the prices that I adopted. It verified the market prices that I used. I have no recollection as to the exact prices which any of these pipe people quoted me, except that it was close to the price that I used. I did not preserve the memorandum. It did not occur to me that I might be asked where the memorandum was. I telephoned to Mr. Miles in the United States Cast Iron Pipe Company. I told him that I was Mr. White of the Brooklyn Union Gas Company. The only inquiry I made of him was the market value of the pipe, cast iron pipe, June 1st, 1923. He did not ask me what I wanted it for. I had no further conversation with him at all; he just simply gave me some figures.

This telephone conversation was sometime in June, 1923. I am not quite sure, but that is my best recollection at this time. I did a lot of telephoning at that time for other things, and that is my best recollection. He did not ask me if I wanted to buy any pipe. I do not remember whether he gave the answer immediately or if he took sometime [fol. 691] to ascertain it. That is so long ago that I cannot recollect the details that close, whether he called me back or whether he gave it to me immediately, I could not say just now; so many other things have transpired in the meantime and it is almost impossible for me to be able to give a really responsive answer as to the details.

I made an affidavit in June in respect to the reproduction cost of some mains. I do not recollect whether it was prior to June 1st that I asked him, or after June 4th. It

was in the month of June. That is all I remember about it. I do not definitely place the date I used the telephone in my mind, it is almost impossible for me to do it.

I don't remember who I telephoned to in the Warren Foundry Company's office. I can't recall his name. He is a man I have been calling up from time to time. He seems to run the business. He has been in conversation with me many times, but I cannot recall his name. I think he is the manager. I likewise told him that I was Mr. White from the Brooklyn Union Gas Company and I just made the same inquiry of him of the market value of cast iron pipe on June 1st, 1923. He gave me the information. Whether it was directly at that time or subsequently, I don't know, I don't remember. He gave it to me, though over the telephone. I didn't ask any of these gentlemen to write me this information. I had no further conversation with him regard the matter except just to inquire the price, that I remember. He did not ask me if I wanted to buy some pipe. He did not ask me any questions at all that I can remember. He just gave me the price with-
[fol. 692] out any further comment, in so far as I can remember at this time.

I spoke to Mr. Engel in the John Fox Company. I have known him for many years. I told him who I was at the other end of the wire; the usual telephone introductory that you make when using the telephone. I told him I wanted the market price of pipe on June 1st, 1923. He did not make any inquiries as to why I wanted it. None of them asked me whether I wanted to buy pipe or not. None of them tried to sell me any. Nothing was said about quantity in any one of those conversations and nothing was said about deliveries in any one of those conversations.

In the fall of the year, when we are fulfilling our requirements for the next year, we invite some bids by these same people. That is done through a form, a printed form with some typing on it, which consitutes an invitation to bid on certain pipes that we contemplate purchasing. The custom of sending them this form and inviting them to bid has prevailed since I have been there as long as I have been there. That occurs annually; in some instances when it is necessary to replenish the stock which has been drawn

on more than we anticipated, why, it is more than annually; sometimes twice or three times during a year, it all depends. The building activities govern that.

Our inquiry, to them when we are expecting to make actual purchases of pipe are not always made in a requisition on a form. Before we issue this printed form sometime, before we make out our requisition, we inquire in regard to the state of the market. That of course de- [fol. 693] termines whether it will be more economical to purchase pipe at this particular time or hold off and hang on to our depleted stock until such time as there is some little fluctuation in the market which we may, for economical reasons, take advantage of. I am constantly making inquiry from them regarding the pipe market. That is the usual thing for me to do.

My general question is what is the market price of pipe, and then I tell them what sizes I want. That is how I generally inquire. I might also inquire whether the pipe was going to advance in price, for the same reason. When I called them up in reference to this market price on June 1st, I asked for the market quotations; I did not ask as to the conditions. * * *

[fol. 694] I haven't preserved most of my working papers. This book that I have here, contains some of the results of my working papers which I first made out in lead pencil and then had typed afterwards, and then it is conveniently filed for reference in this loose-leaf binder, and in some cases I destroy the lead pencil memos that I have made [fol. 695] and the calculations. It didn't occur to me that you would want to look at the exact quotations that were furnished to me by the pipe people. I expected that I would be cross-examined slightly on this exhibit of mine, but I did not think that possibly I would be asked regarding this memorandum and asked to produce the result of my inquiry of these pipe people. They were some of the factors that I took into consideration in forming my judgment in regard to the value.

The knowledge that I had was the general experience that I have obtained in purchasing pipe for a period of years, and so acquired. The fact that I have purchased pipe over a period of years would not inform me as to the

market price on June 1, 1923, but that coupled with the information I obtained, and consulting the various publications on the question, and linked up with the purchases that I have made immediately prior to June of that calendar year, or almost immediately—I should not say immediately, but during the calendar year—and the fact that I was going to buy some pipe that way, why, the whole thing put together and reasoned out would give me a very good idea of the market prices. The purchase nearest to that time was in December 1923. We bought some 6-inch, 8-inch and 12-inch pipe in July, 1923. The tons in round figures are 645. The 6-inch we bought was 544.5 tons at $70.60 a ton; 12.62 tons, I think that is, of 8-inch pipe at $70.60 a ton, and 66.45 tons of 12-inch at $68.60 a ton. That was all cast iron pipe purchased from The United States Pipe and Foundry Company, if my recollection is correct. That was to be delivered whenever we could get it. There [fol. 696] was no agreed date of delivery. The requisition for that pipe, to the best of my knowledge and memory, was made out some time in June, 1923. I could not say exactly whether the purchase price of the pipe which I did purchase in July was more or less than the price quoted me in the June telephone conversation.

This pipe was billed to me by the pipe people—The United States Cast Iron Pipe Company. I will bring you the bill from the pipe people covering the purchase of this 6-inch, 8-inch and 12-inch pipe in July, 1923. I didn't have the knowledge of this quotation that I just read as to the value of the pipe, on June 1st, except in a general way. It was after I obtainedd all this information from the pipe people that I ordered or placed this particular order. I would not call 625 tons a small order. It was an exceptional case for us to buy pipe as we did in July. That was exceptional for the reason that the purchase of pipe generally for stock in dependent upon building activity throughout the territory, and we, in a large measure, are governed by that in rendering requisitions. Sometimes the building activity is in excess of what we anticipate, what we have to assume in the nature of a prediction in making up our requisitions. In other words, sometimes they go into a territory where a certain size is used and we deplete

our stock to that extent, and at other times, why, it is the reverse, and this was one of those occasions. * * *
[fol. 697] I computed the number of tons of cast iron pipe shown on Plaintiff's Exhibit No. 164 and with the exception of the wrought iron pipe representing the sizes 1¼ inch, 1½ inch and 2 inch, the tonnage computed shows 110,312.55 tons. That tonnage includes the steel pipe. Everything in my calculation is regarded as cast iron. If I were ordering the cast iron that is necessary to construct this main system, that would be the tonnage that I would order. I am using the term "Main system" to include the distribution and transmission, but excluding the service.
[fol. 698] If I were going to construct this main system I would order the entire quantity as of a certain date and then make arrangements for its delivery on as convenient dates as possible, so as to keep our forces working and at the same time not have any great amount of pipe on hand or in storage. The foundry companies or the cast iron pipe companies do not increase their price if we want early delivery, but in a very special case they might, although I have never had any experience along that line. I have generally given them sufficient time to deliver. Spot prices might be a little higher than the ordinary quoted prices for a small job of some kind that you would want in a hurry. The pipe companies do not make an allowance or reduction of two or three dollars per ton for winter delivery. They didn't in December of this year. I am certain that we could not buy pipe in December, 1923 for delivery during that month, or January, and get a reduction of two or three dollars per ton.

I have not noticed that the price of cast iron is usually a little higher during the summer time. I have never looked that up with the idea of informing myself as to what period during the year or what months during the year the price is apt to be a little higher. I have generally regarded that as the natural fluctuation. Our advantage of buying in December of each year consists of having the material in the yards when they require it, to serve our consumers promptly. I have not noticed from my experience that we were able to buy a little cheaper in December than we were in June or July.

[fol. 699] The Iron Age, states in its quoted prices that there will be a reduction of two to three dollars per ton for winter delivery. I cannot remember noticing that announcement in any other publication but, it is not an unusual condition. As to how long it would take to manufacture 110,000 tons of pipe, it could be spread over a year's work, but, I would not expect to be able to manufacture it in less than a year's time.

Assuming that I was confronted with the task of reproducing this main system in my opinion, it could not be accomplished within a year or possibly a little longer. It would take about two years.

In placing such an order I would anticipate having a flat price agreed on at the outset for deliveries running along through the year or more that I would have in contemplation. I would not contemplate making any provision for fluctuation in prices between the time consumed in its manufacture, the manufacture and delivery of the pipe, because I have assumed the contracts being executed at a certain time. My experience shows that the price of cast iron pipe has been ascending year by year so it would be advantageous in the light of this experience to buy on a particular date, even though we were going to take two years to use the pipe.

The price of cast iron pipe as compared to 1914 today, is more than double what it was in 1914, but during that period from 1914 to date there have been years when it was extremely high and then the following year it would be comparatively low. Assuming that I were confronted by this [fol. 700] problem of reproduction I would aim to place my order in the spring, if we thought it was better and more advantageous to place it in the spring. I don't know whether the foundries are busiest in the spring or not. We are laying the pipe all the time, whenever we have an open winter—this one particularly.

Knowing that it is generally true that the prices quoted in the winter-time are somewhat lower than the prices quoted in the summer I would seek to place my order in the winter-time rather than in the summer or the spring.

In 1914 we paid a foreman, skilled labor, 37 cents an hour. In 1922 we paid 72 cents an hour. These prices per hour that I am giving you are plus; that is to say, there is a

decimal beyond that point. In 1914 we paid caulkers 29 cents an hour. The rate that we paid in 1922 is the same as 1923. There is no increase over those two years; that is, no general increase, but there might be isolated instances, and they are very few. The caulkers in 1914 were paid 29 cents an hour and in 1922 or 1923, whichever way you wish to take it, 62 cents an hour. The yarners in 1914 received 25 cents an hour, and in 1923, 56 cents an hour. The laborers in 1914 received 21 cents an hour, and in 1922 or 1923 they received 52 cents an hour.

As to what figures I adopted for my estimate on June 1, 1923, as to those classes of laborers, I considered the condition of the labor market and the fact that we have a comparatively small organization which we keep steadily employed, who have been with us for years, and through that steady employment and other advantages we give [fol. 701] them, why, we are enabled to retain them at a lower rate than the rates prevailing out in the market in other lines of endeavor covering the same occupations.

I took foremen at $1 per hour, laborers at 62.5 cents per hour, skilled laborers at 68.75 cents per hour, yarners at 75 cents per hour and caulkers at 87.5 cents per hour. I took a higher rate than is paid by the Brooklyn Union Gas Company. I am giving you the figures that I myself pay my men. I got the market price of this same class of laborers by going to the contractors in the territory here in Brooklyn, and through inquiry. For instance, Duncan & Company who do work for the Kings County Lighting Company; Kenney & Company, contractors for the Brooklyn Edison; the City of New York through a publication issued by one of the bureaus of the Board of Estimate; the contractor who is engaged in laying the 72-inch water main right here in Brooklyn now, I think it is Gillespie and several contractors in Queens, and I have directed my attention to the question of the hiring of this class of labor right here in the Brooklyn Union territory.

The normal turnover with our labor annually is very small, I don't think it would be a fraction of one per cent. These men on our permanent staff have been with us a great deal more than two years. I can't remember with whom I conferred at Duncan & Company, my memory on names is very bad. I think it was Mr. Duncan himself.

Mr. Miller is not connected with Duncan or the Kings County, as far as I know. I asked Mr. Duncan what rate he was paying laborers and caulkers. He told me he was paying $1 for caulkers and 62 2/3 cents for laborers, per [fol. 702] hour. That was around June 1. I cannot remember the exact date I went to any place. These amounts I have selected were as of June 1, 1923. Mr. Duncan does some contracting work of some sort for the Kings County Lighting Company. He lays their mains and services. I do not think they have an organization of their own.

As to the labor conditions in the territory of the Kings County Lighting Company district as compared to the conditions which exist in the territory of the Brooklyn Union Company, they are about the same. We offer more advantages to an organization for steady employment than Mr. Duncan, who is a contractor and takes these men on jobs and just as soon as he is through with the job or contract, why, lets some of them go. We have work enough in our organization to keep them going throughout the year, it just happens, but in doing this work we are not going to use our regular staff. We have gone into the outside market and employed foremen at a dollar an hour, and caulkers at 87½ cents an hour, and yarners at 75 cents an hour. The people that we employ or contemplate employing to construct this main system are no part of our regular organization. What we pay them has nothing to do with what we are going to pay or thought we would be obliged to pay these particular people. On June 1, 1923 the Kings County people would have been confronted with the same problem. They would have to be controlled by the labor market which would not be different in the two territories.

There is a vast difference between the sub-surface obstructions in the streets confronting the contractor in the Kings County Lighting Company district, as compared with [fol. 703] the Brooklyn Union district. I am basing that statement upon my knowledge of both territories. I am familiar with the Kings County Lighting Company territory as I have been over that territory frequently and I have observed exposures for main extension work. I know from observation of the surface what is contained underneath it to an extent, indicated by the manholes and the

roadways and other indications which govern me in my judgment for the purpose of making a comparison. Also the existence of subways, the existence of large water mains and conduit lines, many of which exist in the territory of the Brooklyn Union, which do not exist so extensively down in the Kings County.

I would not say that the territory of the Kings County Lighting Company, or their streets, is so obstructed with subsurface obstructions as the Brooklyn Union. The district of the Kings County is that portion which is beyond the Brooklyn Union and above that part of the district supplied by the Brooklyn Borough in part. It is the southern end of Brooklyn. I cannot bound in streets or wards the territory of the Brooklyn Union, it ends somewheres around 61st. Street and that is where the Kings County commences and goes south. That is a very rough description. I do not know how far south or how far east, I have not got their boundary lines in mind. The Brooklyn Borough supplies Coney Island, socalled The fourth avenue going down to the end there and their territory covers that portion of the Fourth Avenue Subway which lies south of 60th Street. It is the 30th Ward that the Kings County Lighting Company supplies and I think part of the 31st. I don't know if Mr. Duncan is doing any work except the work for the Kings [fol. 704] County Lighting Company. I do not know how much of an organization Mr. Duncan has.

Kenny & Company do contract work right here for the Brooklyn Edison, right throughout our territory. At some point in their work I believe they do need caulkers and yarners. They told me they had some caulkers and what they were obliged to pay them. They caulked possibly water mains when they come in contact with them in connection with some of their electrical conduit construction. It may be necessary to have caulkers at those times, you know, in order to look after the water mains, where they expose them or hung them up temporarily during the progress of construction of a conduit line. Where they interfere with subsurface constructions they sometimes call upon the owner to restore it and then pay the bill for that. If it is handier while the hole is open to effect the repair yourself, generally you take advantage of that fact and do it. In that way you save time and lost motion of your gang.

I imagine they take advantage of that. I am certain that Kenny & Company have caulkers in their organization but I do not know whether the Brooklyn Edison Company have any caulkers in their organization. They may be laying water mains, but I don't know.

I sent a representative to interview Kenny. I talked with Mr. Duncan personally and I confirmed that by telephone. In most cases I went out where the gangs were working and inquired of the foreman on the job, how much they were paying the caulkers and the laborers. I believed Mr. Duncan, but, I shopped around and wanted to find out and get first-hand knowledge myself. He told me he was paying the laborers $6 a day and that, reduced, gave you [fol. 705] 66⅔ cents per hour. He told me he was paying that as of June 1st, 1923. I did not inquire of Sullivan Bros. over in the Flushing District. That company lays the mains for the New York & Queens as contractor. I did not read the record in the case of the New York & Queens Company so as to inform myself regarding the rates of pay paid by Sullivan Brothers. I did not know Mr. Sullivan testified there.

Copy of the letter from John H. Duncan & Company to the Kings County Lighting Company on June 11, 1923, marked Defendant's Exhibit 6 for identification, states that they were employing common laborers for 50 cents an hour and that it was not until June 11th, that they increased their rate of pay from 50 to 62½ cents an hour. I am sure that at the time I made inquiries I learned that they were paying 62½ cents on June 1st, instead of 50 cents, as stated in the letter. My rate per lineal foot of excavating and backfilling for six-inch cast iron pipe is, $.8719 cents per foot.

Leaving out the pipe, the cost in my unit per foot for six-inch pipe laid is $1.5568. I did not learn that Mr. Duncan had a contract to put in the mains of the Kings County Lighting Company the pipe to be furnished by the company. As to the efficiency of laborers from 1914 down to the present time, we did not get as much for a days' work on June 1, 1923 as we did for a days' work in 1920. We got more per unit of effort prior to the war, prior to 1914 and 1915, and about 1915 things began to change generally and, as a result, it is harder to obtain men to begin with, and it is harder to get them to do as much as they did formerly. That condi-

[fol. 706] tion of unrest began to start just about that time, and up to the present time it has been corrected in a way, but you can not get out of men today what you got out of them prior to the war, in the way of labor. They are as inefficient today as they were during any time since 1914.

As to whether it is more costly per foot to lay a main system of a thousand miles, or to lay, four or five hundred feet in isolated jobs depends wholly upon the organization that accomplishes the work. The Brooklyn Union organization, who have been trained to this work, would accomplish the work about, I should say, at the same cost. It should be fairly comparable, if you consider all the factors that go into the job.

Every time they do an isolated job, they do not have to go on to the work with all their complete paraphernalia, sometimes they only have part of the paraphernalia but, they have all that is necessary for that particular job. Assuming that they were going to lay, we will say, 500 feet of pipe, they would go out there with the paraphernalia necessary to do that job, and then they come back again and go on some other job. At a later time they go out again and lay 500 feet more and back again and so forth. If they were going to lay the pipe, say 10 miles in one complete job there might be some slight difference in the cost. Getting the men on to the job and off the job and carting your tools on and off the job, there would be some difference in that item. In laying a long stretch of mains you would have to consider other factors; for instance, weather conditions occurring between the two jobs, and would have to assume all things being equal.

[fol. 707] Assuming all things being equal, if you have a ten-mile run, the organization goes there and stays until the ten-mile installment is completed our unit of cost per lineal foot would be somewhat less than if they laid ten miles in various spots, ten miles in the aggregate, five hundred feet here, a thousand feet there, seven hundred feet here, a thousand feet there, seven hundred feet somewhere else, aggregating ten miles. This organization which it would be necessary to build up, to construct this one thousand miles of mains, would become as efficient as our organization that is now with the Brooklyn Union Gas Company, several years after they completed this job.

They would have to go through the laying of this whole job of one thousand miles before they would become as efficient as our organization, and a considerable distance beyond this.

We have laid since I have been connected with the Brooklyn Union somewheres in the aggregate of 500 or 600, from memory, and I am including what I have laid in the subsidiaries, too. This same efficient organization works on the subsidiary companies' mains at times. It is a floating organization and we swing it elsewhere. We swing it around. It is one organization that serves the subsidiaries as well as the Brooklyn Union.

I take 25 per cent. of the mains of the Brooklyn Union and 25 per cent of the mileage of the subsidiaries which gives me 250 miles, roughly, and about 250 miles for the subsidiaries. I am very conservative in that figure, but that is my best answer at this moment. 25 per cent. of the total mileage has been laid during my connection with the Brooklyn Union Company, then I have also laid 25 per [fol. 708] cent. or over that, in fact, of the subsidiary companies. I am taking the mileage of the subsidiary companies into consideration, and I take a quarter of that and add that to the 250 miles, and that is the way I get the mileage, knowing that I am conservative in what has been laid. We have laid 500 miles of mains, that will show the number of miles of mains that we have laid since 1910. You can get that information, as to how many miles of mains you have laid, not only for the Brooklyn Union but for the subsidiaries as well, from the books. Year by year each subsidiary has a book, and the Brooklyn Union has a book. It is all totalled up. I have the main mileage book that shows the withdrawals of mains and the causes of withdrawals. It actually shows the causes for which the main was withdrawn. The book showing the additions to the main system since 1910 down to date, is an exhibit. The additions to the main system of the Brooklyn Union Gas Company from 1910 to date, are 114,232 linear feet 1911, 120,323 linear feet; 1912, 111,366 linear feet; 1913, 147,097 linear feet; 1914, 123,112 linear feet; 1915, 113,946 linear feet, 1916, 93,059 linear feet; 1917, 55,250 linear feet; 1918, 11,647 linear feet; 1919, 30,306 linear feet; 1920, 22,585

linear feet; 1921, 24,207 linear feet; 1922, 48,064 linear feet; 1923, 76,037 linear feet. Making a total of 1,091,251, which equals 206 miles plus. As to the subsidiary companies I only have the total with me that includes both the Brooklyn Union and the subsidiary companies during the same years, from 1910 to 1923. That is 359 miles, making a total in [fol. 709] all of 565 miles. This efficient organization that I spoke of has laid 565 miles in the last thirteen years. That job is about half as big a job as the job now confronting me in reproducing these 1,017 miles only this is accomplished in thirteen years and the other is supposed to be accomplished in two years. I did not have, nor have I now, the number of miles or feet of pipe withdrawn and the causes for the withdrawals, here. That is readily available. The reason can be ascertained where I withdraw a piece of pipe in the records.

I have considered the steel the same as the cast iron in calculating the cost of 6-inch steel pipe and 12-inch steel pipe. 2-inch wrought iron pipe is $0.2730 per linear foot; specials, valves and valve pipes, governor pits, $.0218 per linear foot; incidentals, $.0147 per linear foot; making a total for the material of $.3094 per linear foot. Cost of labor on 2-inch wrought iron pipe: The cartage, $.0073 per linear foot; blocking, placing and levelling, $.0146 per linear foot; excavation and backfill, $.5344 per linear foot; city inspection, $0.226 per linear foot; foremen, watchmen and water boys, $.0444 per linear foot; making a total for the labor of $.6233 per linear foot. The total for both labor and material is $0.9328. The last item of my cost of 6-inch pipe was the item of cartage. That was 6 cents per foot based on my experience. My experience briefly *rated* is covered in the laying of 565 miles of mains in thirteen years, all of which had to be carted. Trial figures that I have taken off from time to time during the progress of the work show the cost of carting that particular 565 miles [fol. 710] of mains. I took off what we actually have to pay for taking the pipe from the freight yard to the storeyard and from the storeyard out on the territory. In each instance the pipe shown by my figures is first taken into the storeyard and then taken out at some subsequent time on the job, that would be true of all this pipe that I would

take right into the storeyard and then take out at some subsequent time on the job. We would string a very little of it along the blocks, and the amount that you could put out that way without being stopped would be inconsequential and, as a result, you can consider that all of this goes through the same action. To an extent you could string the pipe along the line of trenches in the outlying districts up to a certain point, and then they would stop you, the police would not allow you to do it, and the first thing you know, you would have complaints coming in where the children had been rolling it and had been injured, and consequently sometimes many damage suits as a result of those injuries. It would depend on how long it was left there, as to whether this organization we have built up to do this work, would put the pipe in about as fast as delivered. That would depend entirely upon deliveries, how they were made. Sometimes there is freight congestion; and other times there are storms which prevent rapid handling, and there are many conditions that arise during the delivery of pipe. We often have it happen in the comparatively small purchases of pipe that we make now. I contemplated that this carting would be done by motor truck. Each one of these pipes is 12 feet long, but, we are carting it by weight, we are not carting it by length. It [fol. 711] figures out so much per pound, and there are so many feet to the length. It would figure out so much for the different sizes for 6-inch taking 30 punds to the foot, 2 mills a pound, that is $1.80, and 12 feet, 72 cents a length. That is, in my judgment, a fair estimate of the cost of carting pipe and delivering along the side lines of the trench—72 cents a length for the double action. That last was for the double action involved. That is the pipe taken from the freight yard to the store yard, and then taken from the store yard and brought out on the street; that includes two handlings. That is unloading it from the freight car on to the truck, taking it over to the storehouse and unloading it, and then at some later time loading it again and taking it out to the trench and unloading it. Supposing I went directly from the freight house out to the trench and strewed it along the highways, in that case you would have possibly one half of that cost, maybe a little bit more than that.

This 2 mills a pound which I obtained as the result of my experience is the result of the study that I made and the natural consequences of handling pipe in several points in the district independent of any book in the office. My working papers on that have been made over a period of years. I suppose I have some of the working papers around. I believe, there are some books of that kind kept in the auditor's office, that show the actual costs of laying these various mains. That book, in part, not wholly has the various items of cost for these items, pipe, yarn and lead and such special items as carting. The cartage gets in that cost book—what gets in there is merely the driver's wages that are paid and [fol. 712] it does not take in the maintenance of the rig, nor does it take in the number of men in the rig, consisting of pipe gangs who are there for the purpose of handling the pipe from the freight car to the motor truck, nor does it take into consideration the cost of the men and the maintenance of the truck unloading this pipe, taking it from the storeyard to the street and unloading it at different points. In other words, you have there, as I understand it, the bare wages of the man driving the motor truck. I don't know where the other costs are reflected. I don't know what is charged to the consumers. These items that I have mentioned are not in the books showing the actual costs of laying the mains. The item pertaining to cartage is incomplete. I don't know what they leave out and I have no knowledge about them. I know they leave out those items of carting by my attention having been called to the difference in the cartage that exists on some mains which were laid around June 1st, and the cartage that I used in my reproduction cost.

[fol. 713] February 4th, 1924.

J. H. Moore.

Direct:

I am a Publisher connected with the Robbins Publishing Company, publishing the Gas Age Record. My position is manager and secretary of the company.

The Gas Age Record of June 16, 1923 is the paper to which I refer which our company publishes. Page 786 in this issue referring to the quotations on cast iron pipe under

the heading "Materials and Markets"—was taken from The Iron Age. I know it is the policy of this company to take our prices on cast iron pipe from The Iron Age. That has been the system of our paper ever since we have published "Materials and Markets" in the Gas Age Record. I should say a period of three or four years. The policy is still the custom.

I have been connected with papers of this sort, trade papers, ten years next August. To me such quotations show the trend of the market.

[fol. 714] J. H. MOORE

Cross:

This information for publication in the Gas Age Record, is taken from The Iron Age. Personally I put no information into that paper.

The Gas Age Record is gotten up by an organization, the Robbins Publishing Company. They are the owners, they control the paper and publish the paper, they are the publishers. All the material that goes into the Gas Age Record here is gathered together by the Robbins Publishing Company. I am the Manager of the publication. I don't have anything to do with gathering the various articles. The editorial department gathers the "Materials and Markets" prices here. Floyd W. Parsons is at the head of that. He is not the editor of The Iron Age. No connection with it. He is in Florida, writing while there. It is either done by one of two individuals in our editorial department. I did not issue instructions to Mr. Parsons as to where to get the quotations. Mr. Parsons came into our organization after these instructions were given. The original instructions were issued by Mr. Robbins, the President of the Company, only as to cast iron pipe. Perhaps because at one time he was General Manager of The Iron Age, he wanted to still continue with them.

I believe all the metal prices come from The Iron Age. Some of these prices come from The Coal Age. I take the prices from The Iron Age because I know they are reliable for a service of this kind.

[fol. 715] The Iron Age, I find, of very good repute and that is so regarded by everyone in the publishing line.

We do not make any efforts to confirm any of the quotations that are put in our paper, because that is not the reason for this service in the publication—in other words theses prices show the trend of the market. We make a comparison from week to week. We have to save the old issues in order to get the trend.

I know it is the policy of our publication to take them out of The Iron Age, but as far as I know Mr. Parsons may get them from some other source. There is really no other way to get them, due to our organization and the way the work is done; there is no other place to get them. I do not mean to say that is the only paper that publishes those quotations. We depend upon The Iron Age. I don't think Mr. Parsons confirms The Iron Age quotations by reference to other papers. We depend upon The Iron Age for service. The gathering of prices of this kind must be handled by a large organization, because the spread is so large that it is impossible for an organization of our size to gether these prices. I do not mean that there is some community of interest or relationship in the way of employment or otherwise between the two organizations. The Iron Age does not provide us with prices for a consideration. There is no connection between the two papers. We simply swipe them. I believe that is the technical term. It is not customary to give The Iron Age any credit. The Iron Age is published once a week, every Thursday. [fol. 716] Our paper is published every Saturday. They have two days jump on us. They come out Thursday and we copy them on Saturday. Our paper has been a weekly paper for I should say, two years and half.

"Defendant's Exhibit 3 for Identification" was received in evidence as Defendant's Exhibit No. 6.

"Defendant's Exhibit No. 4 for identification, known as The Iron Age Annual Review Section, that portion of it that relates to the prices of cast iron pipe, 1920 to 1922, at New York, 6 inches per net ton, shown on page 85, was offered in evidence. Objection withdrawn and the issue of The Iron Age dated June 7th, 1923 was offered (Marked Defendant's Exhibit No. 7) in evidence, if the Court please, the Engineering News Record dated June 7th, 1923 that portion of page 1025 which relates to cast iron pipe prices (Marked Defendant's Exhibit No. 8).

[fol. 717] JOHN T. WHITE

Cross:

I said that I referred to either the issue that I had of the Gas Age Record of June 16th, or the one prior thereto. I have no others.

In the construction of this distribution system, I contemplated employing men to excavate and do the other labor of constructing the distribution system on June 1, 1923 and I also contemplated ordering our pipe as of that date. The men would immediately start to work as soon thereafter as they could, excavating these trenches. It would depend upon the arrangements that I had with the foundries, how long a time would elapse before the pipe would be here. I have known deliveries to have been made within 60 days. I think 60 days would be fairly early delivery, that is thirty to sixty days. Those things are difficult to say offhand, but I think between thirty and sixty days you could get the first shipment if you strained and made a particular effort to do so. The 3 inch size is cast the same as any other pipe. Under ordinary circumstances they do not make 3 inch pipe. It is a size that is somewhat obsolete in some cases, and yet it has its uses. How many miles per day to construct in order to finish this thing in two years would involve a calculation, which I have partially made. The answer is 8,867 feet per day average or 1.6 miles. A good deal of that thirty days would be spent in organization; that is, forming our gangs and getting the thing started. Just how much it would be is very hard to determine. You start with the proposition of green men, green overseers and everybody is not keyed up in any way, shape or form; they have to be organized, and in that way, of course, it takes a consider- [fol. 718] able time, how much it would be rather hard to determine. But it does take time. They wouldn't excavate thirty miles, I would not say . It would be very difficult to place a figure on that. The average throughout the entire period is to excavate 1.6 miles per day but then when our men get in some sort of an organized condition you can make better progress. They would not necessarily do digging no matter how green they were for the first day. When they started digging they would do

some. I could not give you any idea of the start off that way, because that is a problem that is rather hard to place any figure on. I do not think they would be sufficiently efficient at the end of thirty days to do a normal day's work, that is, assuming that 1.6 miles is the normal. They would have to be digging easily six months, and probably eight months before they would reach this period when they would hit the average of 1.6 miles, that is, the first eight months of these two years they would not reach this average of 1.6 miles. They might in some gangs and in other gangs they might not. I have them all working at once, but each gang makes a certain progress. I contemplate in the construction of this, to have the trenches dug insofar as possible to receive the pipe when it arrives, so far as the City authorities would allow us to do it. If you had your trenches all dug, as many of them as you could all ready to receive the pipe, within this thirty or sixty day period you could dispose of quite a lote of pipe by putting it right into the trenches at once. We could dispose of some, but not quite a lot. I just told you that I could not say just what would be accomplished in that time with this green [fol. 719] organization. If I do not know what can be accomplished in the way of trench digging in that time, I am sure I cannot tell you how many miles of trench would be opened. One is linked up with the other. I cannot tell you anything about that; with a green organization it could be constructed in two years, by the fact that we use averages and we could speed up at times when the men got more efficient. That is there is a certain proficiency that is obtained by an organization when it is getting to some sort of systematic and unified way of working. They do not have to go to school or receive any great instruction, but at the same time there is the overseeing of this work, and the fact that green men will not as a general proposition handle work as well as those who are trained in it. For that fact you have to make broad and general allowances when you start in on a job, when green men are considered. The entire accomplishment of course, is more than mere digging. I think they have to spend some little time digging a trench, before they can do it expertly. Some men are more apt to receive orders and execute them itelligently than others and in that way it is rather hard to determine

how a man can go ahead and dig a ditch as quickly and with as little effort as a man who has been doing the job for years.

In making my estimate of the cost of reproduction to which I have testified, I went all over this ground, and I made up my mind how long it would take me to organize our gangs, how many gangs I would need, how many there would be in each gang, what progress those gangs would make, and how soon I would get our pipe, and how much I would have [fol. 720] to average a day. I calculated that pipe would be received within thirty or sixty days, some time between those periods, or within that length of time, and I calculated forty gangs of about 55 men and a foreman to each would be spread around the City. These men would be supervised by engineers. I did not figure in those thirty days they would do any physical work of excavating. I figured not exactly zero, then as to excavation for the first thirty days but almost zero, a negligible amount. I employ them all as of June 1, 1923. They will be doing during these first thirty days, sort of organizing this work or thinking over the work that is to be done and there are shanties to be built, bridges to be built, pedestrian bridges to be constructed, horses; there are guard bars and all the attendant paraphernalia that goes with an organization, to get it in some sort of shape; and this paraphernalia has to be allotted to the different gangs, they have to be instructed as to the use of it, and in that way a great deal of the time in the first thirty days is taken up, outside of such excavation work that they might accomplish. With rough stuff we use these men as carpenters doing that work too. You can take this rough material that we use and have it accomplished cheaper than you could with carpenters, for which I have not provided.

We have forty gangs of men consisting of 55 men in each gang. I did not say that these 2,200 men for the first thirty days are building bridges, vehicular bridges and passovers, and sidewalks so that people can get over the trenches. I said they would do that in part, in addition to such excavation work as they might be able to accomplish. They would not do much excavation, not a great deal, but as to giving you a definite figure as to how much a green gang or forty [fol. 721] green gangs could do between the interval of

building these bridges or assembling the construction work, that would be almost impossible for me to name, except that there will be some done, but how much I could not tell you. That was one of the reasons that rendered double action necessary in transporting pipe, because there is an indefinite relation there as to the receipt of the pipe, the condition of the weather, the permission of the authorities to allow this pipe to be distributed along the street up to a certain extent, and then a question of economy in spreading this pipe right from the railroad in a great number of streets, because in the long run it will prove more costly by reason of the accidents that occur while it is there and for which whoever—well, for which the contractor in doing this work would be responsible.

If they dug the average trenching 1.6 miles per day at the end of thirty days, assuming that our pipe got there they would have 48 miles of trenching done. The average for the entire system is 107 tons per mile. That is what you are going to build; the system. They dig on an average of 1.6 miles of trench per day, or lay 1.6 miles of pipe per day. That 1.6 miles of pipe is figured at 107 tons per mile. You are basing that on the average; you have just pulled from me the 107 tons per mile. On the average the men will construct 1.6 miles per day, and in thirty days while we are waiting for our pipe that would be 48 miles of trench at least that they would do in the first thirty days after the pipe arrived. Now, when our pipe gets here it weighs 107 tons, that would be 48 times 107 or 5,136. How much [fol. 722] of the first shipment would I be able to transport from the freight yard into the trench directly during the initial thirty days would depend upon the amount of the first shipment as a practical proposition. I would order the entire quantity as of a certain day, and then make arrangements for its delivery on as convenient dates as possible, so as to keep our forces working and at the same time not have any great amount of pipe on hand or in storage. In our computations here I have as a matter of fact, taken all of the pipe from the freight yard into storage and then from storage into the trench.

The time I allowed for that period of organization was within thirty days. I expected to accomplish in the way of digging trenches while I was thus perfecting our organization during those thirty days, a negligible amount, some,

toward the end of the thirty days, but very little. During the first thirty days there would—probably toward the end of the month there would be some shipments. The arrivals probably might have been thirty or forty cars. That would be the first shipment. Of course in tons—you see, I am handling this thing from a practical standpoint, and I know that one shipment of pipe consists of—when a shipment of pipe is made, they ship pipe of one size at a time. It takes from thirty to sixty days. We might, within the first thirty days, receive the first consignment from the foundries, approximately 500 tons. That would be taken upon arrival—anything that arrived during the first thirty days would be taken and deposited in the storage yard. Then at the end of thirty days I anticipate and calculate that I would have perfected our organization of 2,200 men or thereabouts and that little or no actual excavation would [fol. 723] have been made; that a first shipment of pipe, consisting of about 500 tons would probably have arrived and been carted to our storage yard. Part of this organization which we were gradually assembling would prepare the paraphernalia necessary to go out on the street, such as I have spoken of before—the timber work, the watchmen's shanties, cutting bed blocks for the mains, constructing horses and constructing other paraphernalia necessary for the street. The gang would be constructing. I would take advantage of their presence there and take up this lost motion in that way, that is, these 2,200 men would be constructing, over the period of thirty days, shanties, bed blocks, horses and these various things, as these 2,200 men were gradually being assembled. It would probably take fifteen or twenty days to get them. In order to get them, you would have to go to the different agencies who provide such labor. In my calculations I have estimated that all of these men entered our employ on the 1st day of June, 1923.

We would divide them up into gangs of the number that I have testified here—gangs of about 55 men each, with a foreman in charge of them. That would easily take probably a few days, separating caulkers from the laborers, and separating the yarners from the laborers, and assigning the men to the different occupations under the different foremen, to get them divided up into 40 gangs. Some of

these men understand when spoken to, some of them talk English; others talk Italian. In that way of course, we would use interpreters in some cases, we would be compelled to. Then we utilize them; that is, take up the lost motion by constructing shanties. There would be forty shanties. I provided for at least 6 or 8 vehicular bridges [fol. 724] to a gang. Pedestrian bridges, the same number, say eight to a gang. They would also have horses. We would get a gang, a gang of 40 men, we would get about 25 to 30 horses—that is, wooden horses. Bed blocks come in strips of spruce. They would have to be cut up. A man saws them right out from the piece. In this case we would saw them by hand. I assume these fellows that I employ know how to saw all right. I could do it a little better if I sawed them by buzz saws in certain lengths, but then I would have these men I was gradually getting together and trying to break in and that would be a start of tuition for them in handling tools. They would have an occasion to handle a saw after they got through digging trenches, in bracing we handle a saw, in putting in sheathing we handle a saw; in fact, in handling any timber for construction work a saw is used, usually one man in a gang does that and sometimes two men in a gang do this work of—the timber work and sometimes any man that is selected from the gang. That is according to the nature and the extent of the timber work. I have seen the men under times of stress in difficult construction being used for that purpose.

There would be some trenches dug within the thirty days, but a small amount. Assuming that I was the contractor on this work which of course I have to do in making the estimates and in the methods of constructing it, I could not conceive that, having 2,200 men in our employ on June 1st and pipe to come in thirty days I could not conceive how you could build any trenches so that any of the pipe could be taken directly from the freight yards to our trench, there might be a small amount. That I could not say. It [fol. 725] would be dependent upon the organization thrown in the field and how much we would have been able to excavate up to that time, the time being unknown. In estimating on a large undertaking of this sort it is neces-

sary to consider the pipe as going into storage. That the size of the job and the various elements involved makes that storage item a necessary element. It wouldn't be advisable, inasmuch as I have shanties, bed blocks and horses and bridges and guarding to build, to employ some carpenters to build those things and put our men right on the work of building the trenches, digging the trenches. The carpenters do that more readily than these green men that it takes some time to organize. I would have to pay our carpenters more money. It would not be more economical to do it because while we are assembling our men we want to take up as much as we can of the lost motion to our advantage, and this work that I speak of is the roughest kind of carpenter work and it can be accomplished by almost any man who has the knowledge of handling tools under the supervision of a foreman or an engineer. Until you had a sufficient amount organized to complete your gang or to complete some gangs, when of course you would throw out your men and begin, I think it would be best to take up this lost motion as best you can, as a practical proposition. I employ them as of June 1, 1923, but they do not go to work until later, some of them do, and others are somewhat later. I have no knowledge of a job of this magnitude being undertaken and never have bid upon any jobs for the laying of trenches as a contractor. I have estimated upon jobs, for thirty eight years but not where my estimate had to enter into competition with other estimates. After the period of thirty days has elapsed and I [fol. 726] have 500 tons of pipe in storage, the men are approaching a stage where they can get along digging these trenches. There is a degree of efficiency there, an additional degree, that is gradually acquired with time, unless, of course, there is a turnover and the turnover among green men in that way is greater, then your tuition is lost and you have to begin all over again.

Take the caulkers and the yarners that I employ and pay this amount of wage, I employ them because they are experienced men in that line of work. It would not take them very long to become efficient. It might take a time for them to get so that they would work efficiently and conform to the general organization's methods and accomplishment.

In some cases they could put a piece of yarn into a pipe and hammer it in and then having them come along and put the lead in, those men can work as well under one organization as they can another, as long as you give them room in the trench. That is all they want. In other places they could not or would not; it is all a matter of supervision. If you provide the joints for a man to put the yarn in or put the lead in, he is busy putting that in all the time, and he can do that equally well under almost any condition, so long as the trench is suitable for him. Our pipe would arrive monthly. Of course, more in the summer than in the winter, but in just what amount I cannot say, but I considered that the thing would come along with fair regularity but at no time in my opinion, would the men dig the trenches fast enough so that the pipe could be taken directly to the trench. All pipe would get here long before they would have any use for it. It would get here in excess of the requirements in the field. There would [fol. 727] not be any delay by reason of the failure of the delivery of pipe if you had reserve stock in your storeyards to overcome that situation, should it arise. We always hold a certain quantity in our stock providing for possible delays in delivery, to endeavor to speed up shipments to that end. I said I took that from experience in the field with the actual work performed with large shipments covering a period of years. I did not say that I took off some test figures. I have figures showing that the cost of carting that particular 565 miles "trial figures," you say, "that I have taken off from time to time during the progress of the work" is field work. That is how I reached the two cents or the two mills because I had some trial figures which I took off to substantiate my judgment. I took these figures from jobs spread over the twelve or thirteen years that I have been here, in many large shipments of pipe that we have received. I have not any jobs that I have performed in June 1923 that I could see the figures of carting from, not field figures, but similar to these. We have not got them for any particular month of any year. I got them just by keeping track of the work as it occurred and verifying what in my judgment should have been the cost of that kind of work, or in other words,

my experience in checking that up with actual occurrences. That figure would show the cost of the driver's time on the truck. These other items of cost do not go into that job, in that way. They would actually get there in the labor figure in some fashion or other. You see, the two actions that I speak of occur at different intervals than you have in mind. In taking a large consignment of pipe from the railroad, the freight yard, to the store yard, that occurs [fol. 728] at certain periods of the year and the pipe is deposited in the store yard and that stops that part of the action. Now we take the second action and the one directly that you have in mind, taking that pipe from the store yard out for distribution in the street or for use there. That, of course, is performed by another set of men at some time subsequent to the time that the pipe is originally put in the store yard and then these cost figures contain some of the cost of getting the pipe from the storehouse onto the job.

A statement is made up from the material and labor ticket of the foreman who is on the job, and that in turn is checked by other people. It comes to me eventually. I look it over. That ticket is placed on forms which go to Mr. Payne. That is the material without cost, and the labor in hours. The tickets shows the labor involved in constructing that job and the quantity of material. The price of the material is done in the auditor's office. All I look over really is the quantity of material and the cost of the labor and then someone in the auditor's office puts on the cost of the material. Then that finds its way into the books in that way. The payroll is signed, the reports that show the material are signed by me. Then I O. K. the expense incurred in any particular job, with the exception of the price for the material. In those records there is usually included the cost of taking the material from the storehouse to the job alone. They contain the cost of transporting the material insofar as—in the field, and no other cost of transportation. On the labor and material, that item appears separately as carting, as indicated by the fact that a [fol. 729] driver or chauffeur is on the ticket. I do not know whether that is specifically mentioned as cartage. I have not one of those tickets here but it always finally gets

into the book. The basis of the labor that the accounting department gets and uses for mains laid is the payrolls, on which is charged the location of the main and the labor of the men engaged on it, and that I think—I know the principle but not the method that the Accounting Department uses, but I think that is the way that is handled. They pick the labor, in other words, from the payroll, where the payments are made direct to the employees, and then they take the material which we have recorded and assemble the two together. That is, the laborer is there irrespective of whether he is laying the main or carting the main or carting the pipe. I might not have it separated as to just whether the laborer is engaged in levelling or straightening the pipe or whether he is over at the storehouse sending the pipe over to the main, but, nevertheless, his total expense on the job, his work on the job, is supposed to be on that ticket. The only element of cost applying to the particular job which does not appear upon the ticket is the possible cost of carting the pipe from the freight yard to the storehouse. That does not appear on those reports. The cost of carting the pipe from the freight house to the storehouse is reflected in and prescribed in the system of accounts of the Public Service Commission, and is charged, to the best of my knowledge, to Pipe and Specials, a separate account. In the account of course I could not tell if it is isolated. I have a general idea of the principle of the way they are handled, but really the accountants could answer the question better. When the pipe is taken from [fol. 730] the freight house to the storeyard in our general practice I do not know what becomes of that pipe, or what particular use is made of various pieces of pipe. We do not tag each piece. I do not know whether a piece of pipe that has been carted is used for the subsidiaries or whether it is used for the Brooklyn Union. That is, assuming new pipe taken into the yard and placed in the piles of the size it is, the question is about identifying the particular length. It goes into a great big melting pot. I have studied cost accounting, to an extent, merely superficial, my knowledge is, on the subject. There is a difference between cost accounting as I testified to it and the accounting methods and systems as prescribed by the Public Service Commission, used in public utilities in this section. The timekeepers take charge or keep track of the cost of carting the pipe from

the freight yard to the storage yard. They make out the timebooks, which are the basis of the payroll for paying the men. That is in my department. They do not make out separate costs showing the costs of carting the pipe between those two points. I get the cost or ascertain the cost of carting a certain shipment of pipe from the freight house to the storeyard by taking the amount of labor involved in any particular shipment, the amount of tonnage hauled, and dividing one into the other and getting the cost per ton, or per pound—reducing it to pounds, if necessary. Each shipment is not handled in that way, computed separately as to the cost of carting except when I want to get a trial figure, when I want to verify when I want to obtain information for the purpose of checking up one cartage figures, I then go in and obtain this additional information, so that I have at first hand from actual field practice and field work [fol. 731] that information and based on the way that we handle it. The figures are not separate in our records. I merely make trial computations for the purpose of establishing that cost—have made them from time to time. I went right out in the field, I stood at the side of the freight car when the pipe was on it, I noted the number of lengths that were put on the truck, I noted the weight of the lengths, I noted the number of men that were engaged in unloading them, and then I went, after they had loaded them upon the truck over to the stoneyard and watched the men there, saw how many men were engaged in taking off and putting it in the piles. The addition of all this labor and the consideration of the weight involved was the figure and I finally obtained that which I was after. That was my data for the calculation.

For the last thirteen years I have been there off and on pretty near every year or every two years, whenever I thought the necessity would arise for verifying what I had obtained on the subject. I go right on the job, right into the field, and I get first hand information. The company has a segregated record of the cost the actual cost of carting the pipe between those two points so that it is obtainable. I would not attempt to get such information from the books. So far as my knowledge goes there is no data in those books that would enable me to answer that question. So far as I know and in my opinion the only way a person

can ascertain with any degree of certainty the actual cost of carting the pipe between these two points is by going down as I did and taking into consideration the number of men employed, the number of pipes that were hauled at a [fol. 732] given time, and the number of men engaged in unloading that pipe. That is a matter that comes in my department. I cannot recall the last time that I was over at the freight yard and took a note of these various men loading and unloading the pipe except that I have done it so many times, I have done it more times than I have fingers and toes. It is the natural thing in the supervision of the work that I am engaged on. I go out and take these little trial costs, field costs, many times, not only of that but many others, and consequently I have so many of them that I cannot recall an exact instance when I do this or do that. It is almost impossible. I have complete supervision and inspection of all of the reports that are sent to the accounting department. All pass through my hands. I do not sign every one, but I see every one. I am talking about the street department now. I said everything that went into the Street Department came to me first. I mean from the Distribution Department to the Accounting Department.

The first is the weekly payroll—payrolls, rather; then the payroll distribution sheet; the monthly pipe and special sheets; the material and supply sheets; the reports of service installations; the reports of service repairs; reports of main repairs, reports of main extensions. There are others, but I cannot recall them at this time. But there is quite a number of others, and taken as a whole they cover the activities of the entire Distribution Department of the Brooklyn Union Gas Company. By saying that I supervised these I do not mean to say that I signed them, but I looked them over. Sometimes I do not put an initial on them, or anything but the very fact that I passed them [fol. 733] on to the Accounting Department consitutes an approval by me, although I do not physically write them. To an extent nothing from the Distribution System is entered upon the books until it has passed through my hands and from me has been forwarded to the Accounting Department. Of course there are some of the staff that look after these things and prepare them for my notice. Sometimes I go through them and they are prepared in certain forms and

ways, so that expedities the recording of the entries. Until that is done and they are passed out of my department, they do not reach the accounting department, and having reached the accounting department, that in itself is evidence of the fact that it has passed through my department and has been approved by me or those under my immediate supervision, with the exception that as I go along I can recall that the payrolls for the purpose of convenience, for payments to the employees, are sometimes delivered to the assistant treasurer's office to make up that money. Immediately upon the making up of the money and the finishing of the use of the payroll in the assistant treasurer's department, that payroll comes to me and I look it over. I cannot recall at this time any other item of cost in any of these reports which come to me pertaining to the extension of mains which are not fully or completely shown on the report excepting cartage from the freight yard to the storage yard, except that element of cartage cost which would be, by the mere fact of one action involved, getting the material on the street from the storeyard without the additional cost of the conveyance of the material from the freight yard to the storage yard—that in itself might be termed incomplete at the time the cost was made out. At [fol.734] this time that is the only thing I can recollect.

Regarding the cost of installing services, that of course is not distributed under the services until the end of the month. Then there might be some incidental bill in connection with the installation of services that are held back and not received for work performed. They are afterwards included in the charge of the services by the Accounting Department. I mean to say that they are not included—I have answered the question directly as you formed it—they are not included in the original reports that go forward for the installation of this work from the distribution department and they are afterwards, after having been received by the Auditors Department, afterwards they are included in the cost in his office of the particular job.

My next item after cartage is yarning and caulking and that is made up of the wages of the yarners and caulkers such as I have given. The yarners are 75 cents an hour, and the caulkers 87.5 cents an hour. This is the figure that I assumed that I could get labor for to perform that kind

of work, hiring them for two years and assuming steady work during the two years, but it is not the figure that Mr. Duncan paid his men. It is below that figure. It is below that, but higher than what I was paying my men. The Brooklyn Union are now paying their men, for yarners 56 cents an hour, and for caulkers 62 cent an hour, leaving off the fractions, that is, I am employing men at 23 cents an hour less—that is yarners 23 cents an hour less than I thought I would be able to get these men for. How I reached the figure .0729 is based on eight joints per day for one caulker, at a cost per joint of .8750; that and one [fol. 735] twelfth of that is .0729. I figured that *is* the best one of those caulkers could do was to caulk eight joints per day, that would be their average result spread over the two years. That is about one an hour. They just pour this hot lead in the joints—into the bell and then they have one of the caulking tools there. All they do is pound that lead solid round this bell and the yarners have to put in the yarn and drive the yarn in tight. Only one of those an hour would be the average for the day. Sometimes more than that. It is according to our organization, it is according to the days, but sometimes they might do ten and sometimes eleven, according to the temperature. In handling men of this description you have to take into consideration the element of strength that it takes to drive this stuff, with the knowledge that as the day advances the man's strength is in opposition to that and recedes. He becomes tired and in that way, of course the results reached in a day diminish towards the end of the day. He gets that tired feeling anyone would get driving a hammer day after day and hour after hour. I would say it is pretty hard work, pretty monotonous work. I think my men could do better than one an hour.

I arrived at that figure of .0382 by taking the cost of the blocks of the different sized mains. We are still on the 6 inch size. I did try pneumatic caulking tools. We have a full equipment in our organization of that kind. It does not take an hour with the use of a pneumatic caulker, but when you take the cost of your apparatus and the time of your compressor operator and the material for your gasoline engine and your lubricating oils, all those considered

bring the cost of a joint almost the same, often the same and sometimes in excess of hand cost. We have found in recent [fol. 736] years, owing to the scarcity of labor, that it is necessary to add to our equipment such machinery as we can to replace hand labor, to the extent that it can be used in our particular line of work, but I find that the use of pneumatic tools is always more expensive than hand labor. I don't think so, always more expensive but I can say it is comparable and it is about as expensive at least. That is true of pneumatic tools used on caulking joints. That is what I know about through my experience, in comparison with other labor cost. I have used that automatic caulker, that pneumatic tool since 1911. We have worn out four compressed air apparatuses and in 1911 we started with them, and up to about 1923 they were in such a state that we had to replace them with new ones and we used considerable pneumatic caulking in 1923. If you are laying a large line anywhere you can bring them on the job, but they are such unwieldy things to handle and you have to cart them through the streets and subject them to the vibration of the roadways, and that puts them out of kilter at times. There again you have the increased cost of repairing them and maintaining them and, in that way, that adds to the *post* of operation; that is, where I have jobs of a size that would warrant bringing them on it. If I take these on a job of 1,017 miles of pipe, I would have to constantly be moving them back and forth. You can handle it through a block of three or four hundred feet and then move it into the next block. It truly was designed for that, but even though it was so designed, this again subjects it to jars and it makes the repairs more than they would be if it remained stationary on the spot. While I had these pneumatic caulkers, I also operated in the old time way [fol. 737] with hand caulkers on small jobs. There was some field notes taken of the expenses of those two methods of caulking while both methods were in use. I kept familiar with the results of the caulking in that fashion. That is part of my duty.

Those records are available now in the shape of rough field notes. I kept them under my supervision. Those records were designed to inform me as to whether or not the pneumatic caulking system was economical. That was the

purpose of it. Those records extended from 1911 down to date, wherever we used pneumatic caulking, and we have some—had some more recently in 1923, for some large work that we did. Those records are so tabulated that they are instructive to me on this question of economy in the use of the pneumatic caulkers as opposed to the hand caulking and my opinion that I have expressed in answer to Mr. Cummings' question to the effect that the hand caulking is more economical than the pneumatic caulking is based upon these records and observations I made over that period. Four of them have been worn out since 1911. I thought it was an advantage to our company to have these pneumatic machines on large jobs. I have not had such a large job as this laying 1,017 miles. The machine can be utilized for more purposes than mere caulking. You can use them anywhere where you can use compressed air power. The blocking is the cost of one block, spruce bed block of seven cents. One twelfth of that is taken to reduce it to a per foot basis, and it results in .0058. That is material. There is no labor in that.

The excavating and back filling—my total figure is .8719. I have them both together. I cannot separate them. They [fol. 738] are excavated by just the ordinary pick and shovel, and back-filled by the use of a shovel. All hand work, no pneumatic tools used there of any kind. I can give you the cost of the two actions, the excavation and the back fill. I have them combined, .8719, that is for both items. I cannot very well separate them.

City inspection is a necessary evil in this work. Foremen, watchmen and water boy, total up .1157. That is taken here as 5 per cent of the labor and material. Those are the items that comprise it. It also includes every item including the City inspection too. We pay the water boy about $10 a week. We would pay the watchman laborer's rates and we would pay the foreman. Eight dollars a day, a dollar an hour. He is a foreman over one gang, one of the 40 gangs. There may be a watchman for each gang. There may be two watchmen for each gang, it is according to the condition of the street at that particular time, overnight, the way it is left, and the number of pipes that are left on the street. The duty of a watchman generally is to guard the tools and shanty and see that the red lights along the

ditch and over the pipe in that particular line of work that the gang is performing are kept lit all night.

The Gas Age Record of January 5, 1924, (marked Defendant's Exhibit No. 9 for Identification) and also the Gas Age Record of January 19, 1924 (marked Defendant's Exhibit No. 10 for Identification), are periodicals that come to my attention. The advertisement of the Chicago Pneumatic Tool Company.

We would use in our work the jack hammer for rock excavation referred to there, if we had any rock, but we have [fol. 739] not the rock, and therefore do not use it. Having breakers for cutting asphalt and digging up old concrete, we do not contemplate the use of such an instrument as that in my figures or in my computation because I have not given any figures on concrete cutting or pavement cutting. I have not used in this computation the instrument called the clay digger for digging up hard clay or frozen ground. The chipping hammers are for chipping metal. The instrument that they use for caulking purposes is called a caulking chisel and an air gun. The compressor that I have worn out is not similar to that one in the advertisement. I secured the ones that I have been using from the Ingersoll Rand Company, from the same people mentioned in that ad. I noticed that they invited my attention there to figures comparing the results secured when using these various tools with the results by hand methods. I have seen this advertisement; it comes to my attention.

I have been in touch with both firms, the Ingersoll Rand people and Chicago Pneumatic Tool Company from time to time, but not with the purpose of ascertaining something that I already knew. I said the cost would be about the same to back fill and tamp by hand rather than by using a rammer for back-filling and in some cases the costs in using the pneumatic appliance would be in excess. It would be equal if not more, to use one of these. I make that statement based upon my experience since 1911, regardless of the size extent or character of the work to be done. Some of those machines are in general use by contractors on big work. There are some contractors who have them and some who have not.

[fol. 740] On a job like this, of 1,017 miles, a person who had a contract would take advantage of all the pneumatic

tools that could be worked economically, or with equal advantage, even if they had experience in such things they would be governed by it, I suppose; the same as I am governed in giving you the result of this computation here. You would not get that tired feeling if you had one of those machines, that is, the machine as the day goes on works just as well, where the common laborer's efficiency decreases somewhat as they get tired, but the costs of the machines keep on. The machine goes on and does not develop any frictional or other feature which modifies its efficiency as the day progresses. It is just as efficient at the close of the day as it is at the beginning of the day. I did not make any investigation at all concerning the relative economy involved in the use of these machines that are described in Defendant's Exhibit 10 for identification, as compared with the methods that I have assumed to use in reconstructing this installation, other than my experience. I have used the machine shown in this exhibit for identification. The first four machines that I mentioned are entirely Rand machines. Not of that model and type which you see pictured in that advertisement (Defendant's Exhibit No. 10 for identification) but the principle involved was pretty much the same and I used them from 1911 up to the time that I recently testified here and that is my entire experience with the use of these devices. We now have four of the Chicago Pneumatic instead of the Ingersoll Rand. I changed from the Ingersoll Rand to the pneumatic. The experience is limited to the use of these machines four of them over a [fol. 741] period of twelve years from 1911 to 1923, and that at the end of that time the machines were substantially worn out and of no real efficiency at that time.

Twelve miles is the largest piece of consecutive caulking in linear feet on which I have employed an automatic caulker. Part was done one summer season and the other part in the following summer season. The length was about the same each season, approximately six miles; that was on the 36 inch line from North 12th Street and Wythe Avenue to the Ward 2 line of Queens. That was in the summer of 1912. I finished it in the summer of 1913. In the summer of 1912, we had two automatic caulkers on that job. They were consecutively in use on that job from early spring until about September. During that period they caulked joints

over a distance of approximately six miles. All of the joints of that line, six miles long were caulked with this automatic caulker and the work in 1913, the summer of 1913, was done likewise with two of these caulkers. I have kept a close record of the expense of caulking by the use of those machines during the summer of 1912 and the summer of 1913. I had a field man detailed just to do that particular work, to ascertain the cost and keep tabs on everything that went into the machine, and all other labor incidental to it, and what was accomplished by the caulkers. Elsewhere at about the same time I installed a line three miles long with hand caulking. That was in Queens, about in 1914, from memory and it was a 20 inch line and I kept a close record of that expense and caulking.

[fol. 742] There was a slight increase over 1913, as compared with 1912 or 1913 for caulkers, in the labor market in 1914 and in making my comparison I took that increase into consideration. I say the result was almost the same between hand caulking and pneumatic caulking and in some cases—or taking that as a whole, the cost of the joints caulked by a pneumatic gun was in excess, slightly in excess of the hand caulking. I have not taken into consideration in your figures and computations the use of any pneumatic tools; in other words it is my judgment that hand work is just as economical as the use of the compressed air tools or pneumatic tools. I mean by that generally, if you can get the labor. In other words, it is my impression that if I can get the labor, it is just as economical to do it by hand. That was one of the reasons why we got the machines in the early spring and back in 1911, 1913 or 1914, that was also one of the reasons because we could not get the labor. There was some difficulty in getting labor in our particular section at that time, here in Brooklyn. I spoke of laying a transmission line, approximately six miles long. It started at the Wythe Avenue station which was located at the corner of Wythe and Kent Avenues, Wythe Avenue and North 12th Street, I should say, and stopped at the Ward Line on Flushing Avenue, at Ward 2, Borough of Queens. That is Williamsburg District, that is starts at Williamsburg District, and the Wythe Avenue is adjoining the Williamsburg Works. Then it runs out through the Williamsburg district and continues on to Newton, Newton Gas Company. It is a feeder for the

Newton holders, yes a feeder or transmission line, a term we have used here. We did not have any other transmission line from the Wythe Avenue station to any other [fol. 743] holder in the outlying sections. We have no transmission line running from the Citizens Works to any of the territories of the subsidiaries. We have a belt line which takes in the whole system and is fed into from these different works. I do not recall at the moment any of our transmission systems running directly from one works out to the territories of the subsidiaries, independently of the loop or transmission line. This line that I spoke of is part of the loop from Wythe Avenue station.

In my figures called "Material and Labor Costs per Foot," it is true that the item for breaking pavement is not included. I did not assume the streets to be in a condition that they appear to have been in as shown by the records of the company at the time the present mains were laid—many of them not paved. I have not taken in the cost of breaking the pavement because I can not include the cost of restoring the pavement, the fact simply is that in my reproduction estimate on "Exhibit 164" there is no charge made for breaking any pavement for the installation of a main. There isn't any charge included for the cost of relaying pavement.

My "Exhibit 164" called "Restoration of pavement" is the pavement that was actually disturbed during the time that this distribution system was built up, that is the history of the pavement broken to accomplish that over the 25 years, and may be a little farther back, as far back as I could get record of it. That is the quantity of pavement at the present day prices, June 1st prices.

[fol. 744] Referring to "Plaintiff's Exhibit 164" the item "Pavement disturbed for construction" represents the pavement actually broken during the time the mains were laid in the territory of the Brooklyn Union Company, with the price per square yard charged by the Borough President's office, Bureau of Highways, at June 1, 1923, for each class of pavement. In the computation extended showing the reproduction cost of mains in use as of June 1, 1923, no labor is charged or included in any way for breaking through pavement to extend the mains shown in the inventory. My sole charge for pavement appears at the bottom of the exhibit opposite the words "Pavement disturbed

for construction." I brought the book which shows the actual cost of some of the jobs of laying mains, a book requested by the defendant. It is entitled "Record of Trunk Lines and Mains, Brooklyn Union Gas Company No. 2.

(Book marked Defendants Exhibit 11 for Identification.)

It is kept in the accounting department of the Brooklyn Union Gas Company and is kept by one of the accountants or one of the clerks in that department. The figures are based upon the labor, for instance, the payroll of the Distribution Department: the material shown there is based upon the material reports that go forth from the Distribution Department, which pass through my hands, and all of these or the report which contains these various items, such as pipe and lead, wool and yarn and hauling, City Inspectors, that all passes through my department: some report showing that in detail. The sheet is headed "Report of Materials and so forth used in laying new mains during the month of July 1923."

The size of the pipe used on the job on Herzel Street east side, 9 ft. 6 inches, north of the curb of Newport Avenue, 7 ft. south of the north curb of Riverdale Avenue was six [fol. 745] inches, and the sumber of feet was 567. It was started on May 1st and finished in 1923. I have no personal knowledge except what I may read in this book as to the cost of this particular pipe. It shows the cost here, but that is not Mr. Dykman's questions. My memory is refreshed as to the cost as so expressed in the book. During the progress of this work or since, I have not known of my own knowledge the exact cost of material entering into that job.

The reports on these jobs come to my office and receive my O. K., not on the material, but the quantity of material. In making up my computations here, I did not, to any great extent refer to this book and get data from it to sustain my judgment as to the costs. I examined it in a way. The report that passed through my hands and which received my O. K. was the quantity of pipe necessary for the job was 567 feet, and I O. K. that. The cost is done in the accounting department by the auditor, Mr. Payne, therefore I don't know whether that figure is right or wrong. Mr. Payne gets his information about the cost of the pipe from

the figures that he uses, I know the principle, but not the method. They are obtained from a running inventory of material, which extends back to 1895, so that the cost of pipe of any particular piece of pipe, any length of pipe taken into storage, or any recent price of pipe, is not reflected in the cost that he handles there. That is, it is an average price over a great many years. He has been carrying an average there, as I understand it, in principle back to 1895. Our storeyard has never been cleaned out, in my time with the company.

[fol. 746] I have testified that reports of various items other than the cost of materials, cost of plant, pass through my department and under my supervision, and are forwarded to the accounting department with my approval, either written or oral, and then they are entered upon some record of the Accounting Department. That is one of the new books on which the new mains are reported. Portions of these reports that come through my department are entered in one book and portions are entered in some other book, according to the classification of the work. The cost of the material is another entry of the reports that has to pass through my department. I have not compared the entries in this book with the reports that passed to my department and came up to the Accounting Department for entry in this book. I have not checked them back to see if they are correctly entered.

The cost of lead wool as shown by that job was $51.84. 524 pounds were used. The cost of yarn was $6.01 and 53 pounds of yarn were used. All quantity of material was given my O. K., without regard to the price. The cost of hauling received my O. K., and that amounted to $13 47 and that is the hauling from the storeroom to the job, and the next figure represents the total cost of material; I had nothing to do with that.

The figure which is shown for credit material recovered, was O. K.'d by me. That is, the material recovered was O. K.'d by me, and not the cost as included here. The net cost of material, I had nothing to do with. The labor appears on the payrolls and I O. K.'d that figure also. It amounted to $125.32 and the next figure is City inspectors and I O. K.'d that; that was $68.71. I approved three

[fol. 747] items, the hauling, labor and City inspectors. Those amount to $207.50. The pipe used on Herzl Street east side, 260 feet south side of the curb, south curb of Newport Avenue and 380 feet south of the south curb of Newport Avenue is 123 feet of 6 inch long. That job was started June 18th and finished June 18th. 150 pounds of lead wool was used. Ten pounds of yarn was used. I did not O. K. the cost of either the pipe or the lead wool or the yarn. The figure for the total was O. K.'d by me. That amounted to $4.56. The labor was O. K.'d by me and that amounted to $53.62. The City inspectors were O. K.'d by me and that amount- to $22.82. The item that I O. K.'d amounted to $81.

The job on Euclid Avenue, the east side, 3 feet south of the north curb of Sutter Avenue, to three feet 6 inches south of the north curb of Blake Avenue is 570 feet of 6 inch pipe was laid. The special used there was 6 by 6 cross, and two 6 inch plugs. I did not O. K. the cost on either of those three, the pipe, cross or plugs. 10 pounds of lead was used; 380 pounds of lead wool and 43 pounds of yarn were used. I used 400 pounds of coke on that job, that is to heat the pig lead. The cost for hauling was O. K.'d by me too. That particular pipe was hauled by the distribution department. Ehrhardt Brothers had nothing to do with it; that I know of. Ehrhardt Brothers are people that do a trucking business. Their bill here is indicated. It appears to me to apply to another job. If you le your eye follow along the lines here (indicating) you will see that job starts here. That does not relate to this work, it relates to another job. The cost of labor was O. K.'d by me and amounted to $213.37.

[fol. 748] The City Inspectors was O. K.'d by me and was $71.90. The amount involved in the items that I O. K.'d was $312.32, consisting of the items Hauling, Labor and City Inspectors. No paving was disturbed on this job. The figures shown, dirt 1,172 sq. feet I O. K.'d. That signifies the basis for the allocation of the City Inspectors and represents the area of opening on that particular job. The surface of the job was 1,172 square feet of dirt. The first job that was called to my attenation, the area disturbed there that is, the surface was 1,120 square feet and

the second job was 372 square feet of dirt in each instance. Those three streets were unpaved.

On the job on East 48th Street, west side 6 feet north of the north side of the curb of Avenue J, to 527 feet south of the south side of the curb, and the *the* number of feet of pipe there was 530 and the size of the pipe was 12 inch. The others were 6 inch jobs, but this is a 12 inch job. I used specials there one 12 by 4 cross, two 12 inch plugs and one 4 inch plug. I did not O. K. the cost of those articles. 450 pounds of lead, 660 lbs. of lead wool, 30 lbs. of yarn and 700 lbs. of coal were used. We used a drip box there. I did not O. K. the price for hauling; that was $52.98 and in each of these cases the figure for hauling means from the storehouse to the job, but in no case from the freight house to the storehouse or freight yard to the storehouse. I O. K.'d the figure pertaining to the labor amounting to $448.18 and also the City Inspectors; that was $61.29. The dirt disturbed there was 999 square feet. That job was started June 8 and finished June 15. These [fol. 749] were all in 1923. The total cost is $562.45. Of those three items, Hauling, Labor and City Inspection, 393 feet of 6 inch pipe was used on the job on Schenectady Avenue, east side, five feet north of the north curb of Avenue J to 394 feet south of the south curb. The job was started June 15 and finished June 19, 1923. I used one cross there, 6 by 4 cross; one plug, two 6 inch plugs. I used 150 pounds of lead and 360 pounds of lead wool and 20 lbs. of yarn and 350 lbs. of coal. I did not approve any of the figures as to the cost of those various items. There is no hauling indicated on that job. At least I have not it here. Of hauling $14.95 was approved by me also the cost of labor. That was $140.95. The City Inspectors, I approved the cost of those and that was $73.26. The total of the three items that I did approve—Hauling, Labor and City inspectors is $229.16. The dirt disturbed there, the surface I assume this is the surface dirt is 1,194 square feet.

The job on Avenue J, south side, 28 feet west of the west curb of East 46th Street is East 46th Street, 40 feet east of the east curb of Schenectady Avenue. 386 feet of 4 inch pipe and 15 feet of 6 inch pipe were used there.

That job was started June 1st and finished June 5th. I used a cross there one, 6 by 4, and two 6 inch plugs. 102 lbs. of lead, 300 lbs. of lead wool, 20 lbs. of yarn were used. I did not O. K. the item for hauling, and that amounted to $11.95. I O. K.'d the cost of the labor and that amounted to $222.25. I O. K.'d the cost of the City Inspectors and that amounted to $69.02. I disturbed 1,125 feet of surface dirt in the work.

[fol. 750] On the job at Bedford Avenue, east side, 121 ft. north of the north curb Glenwood road, 18 feet south of the north curb of Glenwood, the size pipe used in that job was 165 feet of 6 inch pipe. That job started June 30th and finished July 3rd. I used specials on that job. They were one 6 by 6 cross; two 6 inch, 45 degree bends; one 6 inch solid sleeve, and one 6 inch plug. 100 pounds of lead, 200 lbs. of lead wool and 10 lbs. of yarn were used. I did not O. K. the cost of any of those specials. I remember passing on it or approving the recommendation to extend the line. There were some sub surface obstructions there that had to be gotten around, which occurs frequently in the distribution system to a greater or less degree. I did not O. K. any of the costs pertaining to any of these quantities. I did O. K. the costs for hauling. That amounted to $10.93 and I recovered some material there. That was 6 inch split sleeve and a 6 inch plug. I did not assign the cost of the material. I did O. K. the labor and that was $344.40, and the cost of the City inspectors was $308.68. 137 feet (square) of asphalt and 363 square feet of dirt of pavement was disturbed there. The total of the three items that I O. K.'d is $386.01.

456 feet of 6 inch pipe and 4 feet of 12 inch pipe was used on the job on Douglass street, west side, 86 feet north of north curb of Riverdale avenue, to 328 feet south of south curb Riverdale Avenue. That job started on June 6th and finished on June 13th, 1923. Some specials were used there; one 12 by 8 cross, two 12 inch plugs, two 8 by 6 reducers. Ten pounds of yarn and 510 pounds of lead wool was used and Two Boston Roadway drip boxes. [fol. 751] The cost of hauling was O. K.'d by me. I did not O. K. any of the prior figures, or rather costs of those quantities. I did not use lead wool in my computations.

I did O. K. the cost for hauling and that was $16.99. I O. K.'d the cost for the labor which was $376.41, and City inspectors, $83.75, and the total of the three items that I O. K.'d was $477.15. Surface disturbed in the operation for the 6 inch pipe, 1,353 square feet; for the 12 inch pipe, 12 square feet.

[fol. 752] Brooklyn, New York, February 8th, 1924.

JOHN J. WHITE

Cross:

On page 2,178, in answer to the question by the Master: "What is the largest piece of consecutive calking in linear feet on which you have employed an automatic calker," my answer was "Twelve miles." I wish to correct that, as the answer should be approximately five miles, and not twelve. We did lay twelve miles of large mains in the system and that is what I had in mind during 1911 and 1912, ranging in size from 20 inches to 42 inches, but not consecutively. The location at which I stated this twelve mile run to have been made is the same. That is, I simply want to correct the length of run at the place I mentioned on page 2,178 of the mimeograph record, and to say that the twelve miles were laid between 1911 and 1912, but it was not consecutive calking. As my testimony stands corrected, I laid five miles of consecutive mains at the time I speak of, and I utilized these automatic calkers over the five miles, and the conclusions that I arrived at were based upon that experience, among others. I laid the other seven miles and used the calking machines on that, but in other parts of the system not consecutive to the five miles. I mean to say that the 36-inch line from North 12th Street and Wythe Avenue to the boundary of Ward 2, Queens, which I spoke of on page 2,179 of the mimeograph record was a shorter run. It was a five mile run and was made in [fol. 753] two consecutive years. Two miles of the five were made in the first year, and three miles of that were made in the succeeding year. I have made a five mile run; and have made a two mile run in one year and a three mile run in another year. The seven mile run was not made all at one time. Three miles is the longest consecutive

run I have made with those automatic calkers, insofar as I can recollect at this time. In order to give you an answer, I shall have to analyze the seven miles. There may be in that seven miles more than three miles of consecutive calking, but that I have not done because it involves going over the record and I have not had an opportunity to do it. Both were started in the early spring and completed towards autumn. I had in mind when I said 12 miles this distance which I now say is approximately five miles. That was not a mis-judgment as to distance, it was a mis-judgment as to the number of miles calked in those two years. I had in the back of my mind that we had accomplished 12 miles of calking in those two years, which is the statement made, and in that way, I misstated the facts.

On the job on Herzl Street, east side, 9 feet 6 inches north of the north curb of Newport Avenue, one would have to cart the material from our storehouse to that job between a mile and mile and a quarter. It would be about the same for the other Herzl Street job, 260 feet south of the south curb of Newport Avenue. As to the Euclid Avenue job referred to, about three quarters of a mile, very roughly. [fol. 754] The East 48th Street job, over two miles, between two miles and a fraction of a mile; the Schenectady Avenue job, one mile, and the Avenue J job about the same. Bedford Avenue, the east side, 121 feet north of Glenwood Road, I would say, from my knowledge of the conditions, about three miles, but these are very rough approximations. The Douglass Street job, about a mile and a fraction of a mile, a mile and a quarter. When pipe arrives it usually comes in to our different storage points. That which we want to use in Newtown comes in at Elmhurst Station. That which we used in the East New York section comes in the Brooklyn section that comes in at the Liberty Avenue station. If we desire to locate some of it down in this section of the town, we send it down to the Flatbush Station, the freight station in Flatbush, Vanderveer Park, it is called. I am speaking of railroad freight stations. It always comes in by railroad freight—no exceptions. Our storehouses are less than a mile from the Flatbush Station. We have one storeyard at East New York. I cannot give you the streets from memory. It is less than a mile from the Vanderveer Park Station. That is a yard used

by the Brooklyn Union. It is the nearest yard to Vandeveer Park, Flatbush Station. That is, the nearest yard to this down-town station, or rather, the downtown section. I mean by the Flatbush Freight Station Vandeveer Park. I think it is at Flatbush Avenue and Avenue I, but I am not quite sure. I am not very familiar with the location of that storage yard. I have been there a number of times, [fol. 755] and I ought to be familiar with it, but I cannot remember the names of streets down that way. It is less than a mile, I am quite positive.

When pipe gets in to our Flatbush Station, Railroad Station or freight yard, pipe that I would ordinarily use in the downtown section, I put it in that storage yard that I spoke of. The other storage yards are at Ashford Street and Atlantic Avenue; one at the Scholes Street Station, Scholes and Bogart Streets, and we did up to a short time ago have some pipe stored at Fifth and Hoyt Streets, not much but some. Whether that has been taken out of there since the building has been going on, I don't remember. That is down at the Citizens Plant. Those are the only storage yards that I can recall. The storage yard at Ashford Street and Atlantic Avenue is about a mile from the nearest freight yard. Scholes and Bogart Street is about a mile or a mile and a quarter from the freight yard. That is a rough approximation. They are that distance from the North 7th Street Station. Ashford Street and Atlantic Avenue is about a mile from the Atkins and Liberty Avenue Station, and Scholes and Bogart Streets, that is about a mile and a quarter from Palmers Dock, so-called, in the Williamsburgh Section, North 7th Street Freight yard.

Referring to the Gas Age Record of June 2, 1923, I remember my testimony, and I also remember what I referred to at that time. The fact is, I referred to the June [fol. 756] 2nd issue and the issue of May 31st or the one following June 2nd, which I think is June 16th or June 9th. I considered the three of them. In fact, I am always referring to those publications to get the trend of the market, and my best recollection is June 2nd and May 31st and the one after that.

(That portion of page 724, which relates to quotations on cast iron pipe, received in evidence and marked Defendants' Exhibit No. 12.)

There do not appear to be any quotations in this issue of June 9th. I referred to it and found there were no quotations in it. If there are no quotations in it, it does not aid me. I ordered the pipe shown on that particular bill.

(Paper marked Defendants' Exhibit No. 13 for Identification.)

That pipe was ordered in July, 1923, part of an order of that date, and the price paid was $68.60 a ton. The pipe ordered (shown on this Defendants' Exhibit 14 for Identification) evidently is part of the same order of July, 1923, of eight and twelve inch. $70.60 a ton was paid for the eight inch and $68.60 for the twelve inch, delivered at Elmhurst, Long Island. The price quoted there includes the delivery.

Defendants' Exhibit No. 13 for Identification, which is a bill from the United States Cast Iron Pipe & Foundry Company to the Brooklyn Union Gas Company, which calls for 69 lengths of 12 inch pipe and 39 lengths of 12 inch pipe, 97,520 pounds, and the price is $68.60 per ton, and the extension is $3,344.94. Immediately beneath is "Less freight $276.47," which amounts, the total of the bill, to $3,068.47. That is, they billed us the pipe at the price of $68.60 and [fol. 757] then deducted the freight.

(Defendants' Exhibits Nos. 13 and 14 for Identification Received in Evidence.)

We unload the pipe at the freight yard, from the freight car, and cart it from there on motor trucks to the store yard with our labor. That is done with our own motor trucks, at our own expense. The date of the bill on Defendants' Exhibit No. 13 is July 28th, 1923, and it refers to invoice 90412. The date of the invoice or the bill, on Defendants' Exhibit No. 14, is November 5, 1923, and refers to invoice 92348. I treated all the pipe as being cast iron pipe, although I had some steel pipe in our system. Steel pipe cost less per foot than cast iron pipe. It actually costs more per ton, but it is lighter pipe. I only have the per foot quotation here with the discount, as of June 1st. In steel pipe the joints are screw joints; threaded joints. We do not have to caulk those joints, except the two ends, where they go into the cast iron, and they would have to be caulked. The steel pipe we have in the system is part of

the cast iron system, and at points the cast iron system is cut out and the steel pieces put in, and you would have to caulk it at both ends where it attaches to our cast iron pipe. We do not attach one joint of steel pipe to the other joint of steel pipe; that is by thread and fittings. It is somewhat cheaper to connect two links of steel pipe by threading than it would be to caulk them, or caulk cast iron of the same size. We use the steel pipe in our system to get [fol. 758] around sub-surface obstructions and get over subways, get around water main valve pits, conduit pits, and to get around conduit manholes, electrical conduit manholes, over subways. Or, in other words, to get around a place by reason of its lessened diameter. The space it takes up is less than the cast iron pipe, and in that way we take advantage of it to get through tight places, and also to throw out of alignment pipe where we have to get around an obstruction and short. I mean circumference when I say diameter. It is lessened diameter; the wall of the pipe is thinner, and thinner within the cast iron. It is lighter in weight, less metal in it, but the diameter of the opening of the pipe would be the same. In that respect it is a sort of special. There are some bridges in the continuation of the New York Connecting Railway through the East New York section that we go over, that is supplied by our system, the Brooklyn Union system itself, as distinct from the subsidiaries. There are several bridges we go over with steel pipes in the East New York section; at least five or six crossing the depressed tracks of the New York Connecting Railway, which goes down to Bay Ridge. In some cases it is put in a gallery under the bridge core, and in other cases it is suspended on brackets outside of the bridge structure or on the side of the bridge structure. There is a gallery constructed in the concrete floor of the bridge, a depression which accommodates the pipes, when the bridge is constructed. They make that provision for us and then we fill it. After we get the steel pipe in there [fol. 759] we fill it in with concrete, making it a solid job. The pipe is concreted right into the bridge gallery, right underneath the floor of the bridge. That may either be in the footpath or on the roadway of the bridge. I could not tell you how many subways we go over where the pipe is suspended in that way. It is impossible for me to com-

mit all those things to memory. There are a good many, but I cannot give you an approximate idea. In those cases the pipe is carried across from—in each case it is different. We have problems that we encounter of a different nature, and it is carried across the best way we can get it at the time, with the space we have allowing us to accomplish it. There is no general or set way of doing it, we take advantage of the opportunities as presented when the opening is made. Those brackets are part of the bridge structure, put there for that purpose. We do not put them there. Consequently, I could not include them. There is no bracket necessary to go across the subway. It just rests on top of the subway or rests on the ground or the dirt or the fill between the subway and some portion between that and the surface of the street in some cases. Other times it rests right on the concrete structure of the subway. Every case is different. In laying a pipe across the subway there may be some instances where we use the steel pipes too. In laying the pipe across the top of the subway we have to dig a trench for our pipe there. The fill goes on afterwards, it is [fol. 760] filled up. We dig down until we encounter the top of the concrete of the subway or the top of the structure. We put our pipe in while the subway is being constructed, usually, in piecemeal construction. That is the way we lay our pipe at the time that these improvements are being made. As the subways are constructed we go there and upon the completion of the subway or near its completion, when the opportune time arrives, we take advantage of it and we put the pipe in. How deep we would have to dig our trench would all depend upon the particular location. It might be three feet, it might be four feet. I could not tell accurately any particular one; I have not got the depth in mind, but there is some depth to be excavated in all of them. It varies. It might be a great deal, in some and less in others. I have included in my appraisal the digging of trenches for every foot of pipe that I got. I did that because the additional labor and the additional fittings that are necessary in order to put in this steel pipe bring the cost up in each instance to an amount in excess of laying the cast iron pipe by itself. I mean by that that in all these steel fitting jobs we have an unusual amount of fittings; we have the threading of the pipe, which is extra, and we

have delays in waiting to accomplish the job. In that connection, when you get down to the two classes of work, putting them on a comparative basis, this steel pipe work, in order to accomplish it in a replacement job, would cost as much or fully as much as cast iron work, if not more, cover- [fol. 761] ing the same work.

In carrying a line of steel pipes across a bridge, with the hangers all provided by the bridge people, first off you would need the specials at the main which is at a lower level than the bridge floor. There you would have a 90° "L," then you would have your standpipe of either cast or steel pipe to meet that higher level. Then again you would have a 90° "L" to come across the bridge. That would come on both sides. That is 4 90° "L's." Those 90° "L's" would of course be changed from time to time, as the obstructions that you encountered, in order to accomplish the distance and to get to that point where you want to run. The sub-surface obstructions would figure largely in that, and you might have a great deal more than that. I have allowed straight run pipes throughout the whole estimate, with specials but straight run pipe, except a percentage allowance of the cost of pipe, specials. It was the experience I had in the Brooklyn Union, my thirteen years' experience in laying pipe, that caused me to adopt this 8 per cent. for the cost of pipe, for specials, taking in all of the conditions we encounter. That is an average figure, supposed to cover the entire territory, including bridges. I cannot recall any particular instance at this time of a 100 foot run over a bridge. I cannot recall those figures as to [fol. 762] the cost of it. It is impossible. In making this estimate I contemplated that such specials as have been described in crossing a bridge would be necessary, among other specials, and my experience led me to allow 8 per cent. of the cost of running straight work, in addition. 8 per cent. to cover the conditions encountered. In making this estimate, I also calculated that I would dig a trench for every foot of pipe that was laid. I have taken the system of the Brooklyn Union Gas Company in its entirety. I have assumed that it is all cast iron pipe and that the replacement will be on a cast iron basis, ignoring the special construction which is shown in the use of this 86,000 feet of steel pipe, with the knowledge that the steel pipe is fully

as much by reason of the special treatment that has to be given it in its installation, if not more than, the installation of cast iron pipe. The 8 per cent. covers the cost of the specials, the valves, the governor pits and the governors of the entire system, on the assumption that it is all cast iron. There is no steel pipe in the 8 per cent, and no allowance for cast iron, except to regard it as a system of cast iron pipe, naturally. Steel pipe costs less per foot than cast iron pipe. It costs less to screw it together, to join it, than it does with cast iron pipe. We have the filling and the digging of the trench at $2.80 per cubic yard, and the shoring, except where it crosses bridges. It would not be necessary to make any repairs to bed blocks in the next [fol. 763] three or four years. That would depend on what happened to it after the system was constructed, largely. We would construct a good system. As to what repairs would be reduced to a minimum for the next couple of years, that would depend wholly upon the activities of other sub-surface tenants. With the knowledge that I have now and the way it is maintained, I would say the repairs would be about on the same basis. It would not make any difference whether it was new pipe, newly caulked, newly installed or whether it is an old system, but not if an old system is kept up 100 per cent. You would have to keep the new system up by repairing it wherever a repair was necessary.

I laid 12 miles of new pipe a few years ago. I have in mind a fragment, as you might say, of the distribution system which you are trying to compare 1,017 miles with. The experience there is not varied enough to base an answer on. In my reconstruction of this system I have made every provision for the other sub-surface tenants as they exist today, to get around them, so it would not be necessary to make any change in our line by reason of the sub-surface tenants unless they intended to change their system in some way to interfere with ours. It might be necessary to recaulk joints, even though we performed a good job, because of settlement of fill or excavations made in close proximity to our work, and sometimes by settlement of our own work, which occurs in certain fill. I think that after I got this [fol. 764] thing constructed it might settle on me and cause quite a few repairs at different points. The nature of the fill would cause it to settle and the weight of the pipe on the

fill, I mean the fill on which the pipe rests, would be apt not to be a solid foundation in some cases. I would not destroy that, but in constructing the whole system some of those conditions have been experienced and the correction has been made. I have in mind a main up along Bushwick Avenue, which runs from Myrtle Avenue right through to Jamaica Avenue. It was laid 20 years ago, somewheres around that, 15 years ago, right in close proximity to a sewer. That sewer was filled in and the roadway was paved. Since that time, we have had to go there at least two or three times a year, by reason of the settlement of the mains that were laid there, causing leaks. This instance is caused or was caused up to a short time ago, and is still going on, I guess, by defective sewers. A leak occurs and part of the fill in the sewer washes away. Now, that is an instance. There are others. Our mains were laid there fifteen or twenty years ago. I don't know how long the sewer has been there before the main was laid. It has been falling in for the last ten years, since I have been with the company. I would not say it even started then; it may have started long before that, but it is a gradual shrinking. It is not a quicksand shrinking. I know that the sewer leaks and [fol. 765] the fill gets through the brickwork at times, and there are breaks there, and it washes the fill along with it, and it is a gradual action, but at the same time it occurs. I don't know why that should keep occurring for over a period of ten years, just constantly the fill falling in and being carted away by the sewerage. Part of the sewer runs right by the Mayor's house. I don't think he is responsible for it. These damages that I am talking about of other sub-surface tenants I regard as equally incident to new as to old mains. With reference to repairs that are the result of use, normal use of the mains, that is a different line of repairs. It is not brought about by the condition of other sub-surface tenants, but simply is the normal use of our mains. We have that line of repairs. To a greater or less degree the new installation would be as fully subject to that line of repairs as an old installation. There is leakage of joints at times, which we immediately discover and repair. These leaks occur, and they have to be looked after. That, and the subway and the other sub-surface tenants. Leaving them out, that is the only thing I can think of at

the moment additional. Those leaks do not occur by reason of the deterioration of the caulkage. The cause of that leakage is a certain expansion and contraction of the metal due to changes in temperature from time to time. You will get those conditions in the winter sometimes more than you will in the summer, and of course we all know that metal ex- [fol. 766] pands and contracts due to the temperature, and any metal system, cast iron system, is susceptible to that, in addition to the other matters that I have mentioned. That is the only repair I can think of, leakage of joint from expansion and contraction of metal. That is not due to the use of the main except that the main is there and it is carrying gas in it. Whether it had gas in it or not, that would occur. There is no repair necessitated by the fact that gas is flowing through the main and main is in use. Sometimes a main is broken; sometimes it cracks around, right around the circumference, as a result of expansion and contraction. That is, expansion and contraction will break one of these cast iron mains, at times. They are tested by the American Gas Institute specification. I will have to go through the specification to tell you how much they are tested for. I was testifying with reference to a contraction or expansion due to change of temperature. We test them under Section 8, tests of material. "Specimen bars and metal used, each being 26 inches long by 2 inches wide and one inch thick shall be made without charge as often as the engineer may direct, and in default of definite instructions, the foundry shall make a test of at least one bar from each heat or run of metal, the bars when placed flatwise upon supports 24 inches apart and loaded in the center shall support a load of 1,800 pounds and show a deflection of not less than 0.30 inches before breaking, or if, preferred, pencil bars [fol. 767] shall be made which will show a breaking point of not less than 18,000 pounds per square inch. The foundry shall have the right to make and break three bars from each heat or run of metal, and the tests shall be based upon the average result of three bars. Should the dimension of the bars differ from those above, a proper allowance therefor shall be made in the results of the tests." The normal repairs to a main are the caulking due to the expansion and contraction of metal, and also the repairs of those pipes that break by reason of the expansion and con-

traction; also the repairs caused by other sub-surface tenants. We do not always have to move our pipe whenever any other tenant comes along—in some instances we do. In recent years there have been various places assigned for each one of the sub-surface tenants, but prior to that there was not. If I was reproducing this system as I contemplate, as of June 1st, a certain allotted space would be assigned to me to construct this system. I suppose some arrangement could be made with the City authorities. I assumed that the place we now occupy would be allotted for this installation in making my estimate. I would not take into consideration the present day practice of installing mains in reconstructing this system. I took the present space now occupied. I keep track of the expense incurred by reason of our removal of pipe for those causes or alterations for those causes—interference by other sub-surface tenants. The labor and material used on any change of line is reported to the auditor. The report is made to me [fol. 768] first off as to the reason why it became necessary to make the alteration. I then decide whether a charge is to be made or not against whoever happens to be the cause of the alteration in the pipe, and instruct the auditor accordingly to do it. It happens in our experience that conditions have arisen where I have advised that a charge be made against some other sub-surface tenant to reimburse our company for reason of alterations only. I have had these matters arise in my department. There might have been some instances where there would be a damage to our mains caused by a contractor in laying some other sub-surface installation, but I cannot recall them like that. The difficulty with many of these things is that they occur several years after the job is completed. My knowledge does not go any farther than the making of the claim. I don't even know whether it is referred to counsel. It was necessary to make a great many alterations in our system to construct the Fourth Avenue Subway. That resulted in claims being made against the contractor, the City, or anybody. I handled those claims, that is I compiled the claims. I could not tell whether they were paid. I don't know. I would not say if this system was reconstructed, whether the leakage would be practically negligible for the next two or three years. I would not construct a leaky system, still,

it would leak in places. It would be very hard to tell which would leak more, a new system or one that has been in existence thirty or forty years, because I have nothing to base [fol. 769] a comparison on in my mind. I have never built a system of 1,017 miles. The new portion that I laid, the 20-inch and 30-inch transmission system, leaked right after I got it done. It was susceptible to this expansion and contraction that I speak of which, in all cases, is inevitable, and leaks have occurred there in some places, but to what extent I could not say. Assuming that I constructed the system as of June 1st, 1923, the leak, by reason of the contraction and expansion might not occur until the second or third year, it all depends. It might not, and again it might leak the first year, due to the severity of the winters and changes of temperature that occur, and other things incidental to it. It would not leak by reason of defective work, it would be only by reason of the contraction and expansion. Sometimes a very severe winter causes the system to leak to a greater extent than a mild winter would. It depends on the cover that you have for your mains, and there are many factors that go into that that show a result throughout a large distribution system. We have an average of three feet cover; that is an average Suppose we have a very severe winter; that might cause the joints to leak to a far greater extent than a mild winter would. Severe weather does indicate some extra leakage by reason of expansion and contraction. After a very severe winter our repairs to the distribution system are not always greater than after a mild winter, but, probably a couple of months past that time, the breaking up of a hard winter, there is some change [fol. 770] or some indication of leakage. I am talking about any pipe. Our old pipes contract just the same as the new pipes. This cast iron pipe, whether you put it in your new system or whether you have it in your old system, contracts and expands pretty much the same, except when you have a new system you have a tighter gridiron, so to speak, taking the whole thing in its entirety, which is newly caulked and is closer together. The older system is more flexible by reason of the fact that there are more fittings have been put in on account of the changes and the alterations that have gone on down through the period of years, and in that way, the expansion and contraction is somewhat taken up

by the additional joints. We have just as many joints and just as many specials in our new system as we have in our old. There is no difference in that regard, except that the old system is aged and it is more flexible to an extent, if that is the proper word to use, than a new system would be which is tightly caulked up, and probably some miscalculations made in regard to putting in enough sleeves to take up this extra expansion and contraction that may occur. It is my opinion that a new system will not leak any more than an old system. I have made no allowance in my estimate for repairs substantially the same as I have in actual experience found to be the cost of repairs in the present system. I stated that I could not tell whether the leakage in the new system would be greater or less than the present system. When the company withdraws any mains or serv- [fol. 771] ices I have nothing to do with the price or the cost at which they shall be withdrawn from our fixed capital account or our fixed capital account credited because of those withdrawals; that is handled by the auditor. I have compiled a statement showing the sizes and number of mains on various streets and showing the location of such mains from the curb. This data is taken from the records of the company from the card index and the repair records. As to the size of trench that I assumed would be necessary in the construction of the distribution system applying to each size of main from 3-inches to 30-inches; the 3-inch main should have a 3 by 3 bell hole with the remainder of the 12-foot length of pipe 1.83 feet in width; 4-inch main the same, 6-inch main the same. The 8-inch main should have a 3 by 3 bell hole, two feet in width for the remainder of the 12-foot length; 10-inch main should have a 4 by 4 bell hole with a width of the remainder of the trench of 12 feet, 2.17 feet in width; 12-inch main should have a 4 by 4 bell hole with the remainder of the 12-foot length of pipe a width of trench 2.33 feet; 16-inch main, the bell hole should be 4.5 feet by 4 feet, with the remainder of the width of trench for a 12-foot length of pipe 2.67 feet. By 4.5 I mean 4-1/2 feet. Those are the decimal fractions of a foot. For a 20-inch pipe the bell hole should be 5 ft. by 4 ft. with the remainder of the 12-foot length of pipe having a width of trench of 3.02 feet; 24-inch pipe, the bell hole should be 5 feet by 4 feet, and the remainder of the 12-foot length of pipe is

[fol. 772] 3.67 feet in width; for 30-inch pipe the bell hole is 5.5 feet by 4 feet, the remainder of the 12-foot length of pipe, the width of trench is 4.21 feet; for 36-inch pipe the bell hole is 6 feet by 4 feet. The width of trench for the remainder of the 12-foot length of pipe is 4.72 feet; 42-inch pipe, the bell hole is 6.5 feet by 4 feet, and the width of trench for the remainder of the 12-foot length of pipe is 5.24 feet.

(Defendant's Exhibit marked No. 15 for identification.)

Referring to Book marked "No. 3, Brooklyn," being main mileage book, known as Plaintiff's Exhibit No. 169; and turning to Marshall Street between Gold Street and Hudson Avenue, one is a 6-inch main, one is a 3-inch main and one is a 20-inch main. The 6-inch main is 3 feet 6 inches from the south side of the north curb. That is the outer side of the curb, to the center line of the pipe. The 6-inch pipe runs from Gold Street to Hudson Avenue, and then it runs down Hudson Avenue. The map shows that it ends right at Hudson Avenue, and as far as our map shows it has no other connection with any other pipe. Our records indicate that that pipe is connected, but the map does not show it, because the line has been erased there, evidently, and it does not show a connection at the intersection. The 3-inch pipe is 6 ft. from the south side of the north curb, and that continues on beyond Hudson Avenue halfway on the block, and then it is a dead end at that point, and a dead end over Gold Street, as indicated on the map here, the connection evidently being Hudson [fol. 773] Avenue although the map does not indicate. There is an erasure there and possibly the lines have not been drawn out. Our 20-inch pipe is 9 feet from the south part of the north curb, and that, too, is to the center line of the pipe. It runs to a point about three-quarters of the block on Marshall Street, between Gold Street and Hudson Avenue. That stops there and has a dead end; it is so indicated on this map. Our so-called intersection card would give that information if we had made openings in the intersections. The fact that I haven't it on the map doesn't wholly indicate that I have an intersection card covering it. There may be an intersection card covering

it and there may be an omission on the part of the draftsman to put it on the map as soon as the opening was made at that particular intersection. He might not have transferred the data to the map yet. It might have been done recently, and there may be a card giving that information. I have corrected it down to October 30, 1923. It so states on the book. It covers the June 1st period. Our records indicate that those pipes have gas in them. In service installations that we have made during the winter, for the last several years, the records that we have indicate at the present time that there is gas in the pipe. The service installations record in the office of the department indicates we have gas in those pipes. Also the main repair records, service repair records, service installation records, indicate that we have gas in those pipes. Those records are not here now. I will endeavor to produce such of those records [fol. 774] as indicate that I have gas in those pipes or did have on June 1, 1923. Our 3-inch pipe and 20-inch pipe have dead ends and it is also true that in my estimate of cost of reproduction, I have included the reproduction of these mains. I could not tell offhand how long ago the 3-inch pipe was installed. I haven't put in any 3-inch pipe in late years, but how old it is I could not say. I cannot give you an approximate idea of the last time I laid any three-inch pipe, except that pipe which we have taken up and relaid since my connection with the company, for thirteen years. Some of our records show the ages of those pipes; that is, the date of installation, which was obtained from the old books here, now exhibits in the case. Where there were field surveys, of course, we would not have those dates of installation.

Since I have been connected with the company, I have no personal recollection of laying those mains in that particular location on Marshall Street between Gold Street and Hudson Avenue. I can't tell you why those three mains are there. I don't know offhand any necessity for three mains there. I have been through there occasionally. I cannot visualize it; I can not visualize any block in the system except those that I go to constantly; it is near the river. I don't know what consumers we have there. There is a two-inch pipe there, and this two-inch pipe is located

on the sidewalk. I can't remember at this time why that was laid there. Under certain conditions we would lay [fol. 775] pipes under sidewalks for a temporary supply, and also where conditions warranted it by reason of the fact that the street was so crowded with other conduit lines or other sub-surface structures that it would render it necessary to do it. Eliminating the temporary supply, it would be hard to answer how often it is necessary to lay pipe under a sidewalk because of so many sub-surface tenants in the street, but it occurs. I can recall one place in the system where I put several blocks under the sidewalk. The street being crowded with other sub-surface tenants was not the reason in this particular instance. It was on account of a sewer being constructed in Vernon Avenue. The depth of excavation was to be between thirty and forty feet, and I was fearful of relaying the pipe in the roadway, owing to the fact that the settlement would occur over a number of years, and in that case I took advantage and laid the pipe in the sidewalk. Such a case is exceptional, but not rare. I think I have laid some two-inch pipe, that is as a permanent addition to our main system, during my connection with the company. Two inch pipe and three inch pipe is practically obsolete—that is for permanent additions and extentions. It is not generally used, but at the same time it has its uses and we employ it; not always for temporary lines. If we had to take up a block of three inch pipe, we would put it back in store and use it somewhere else in a dead end street, for instance, and in that way it would be useful. If we [fol. 776] took up a block of three inch pipe, today, we would put it in our store yard, and should we have a dead end street to pipe anywhere we would use it for that purpose, that is a short block street similar to one of the blocks down here at the nd of Montague Street. We do not use it throughout the main portion of our system. It is only on the outlying sections where we have stub end streets and small consumptions. We use the two inch service pipe for that purpose. That of course is wrought iron pipe. The three inch is cast iron. The two inch I am speaking about is wrought iron, here, under the side-

walk. I considered it so in the tabulation, as wrought iron pipe. I assume it is because we have no two-inch cast iron pipe in the system. I may have seen this pipe at some excavations along the line of the pipe, but I can not recollect at the moment.

On the north side of Plymouth Street between Gold and Hudson Avenue, we have one eight-inch distribution main, one twenty inch transmission main, and on the south side we have one four-inch distribution main, one twenty-four inch distribution main and one sixteen-inch distribution main. On the south side the four-inch distribution main is four feet north of the south curb, to the center of the pipe, and the twenty-four inch is six feet south of the south curb. When it gets east of Gold Street, the twenty-four inch pipe continues down Gold Street and connection is made to the twenty-inch there. Between Gold and Hudson, on the south [fol. 777] side, we have three pipes—the four-inch distribution and the twenty-four inch distribution and the sixteen inch distribution, all on the south side, and the 24-inch is six feet south of the south curb; the 16-inch is 6 feet south of the south curb. Both pipes are in the same position. It must be one on top of the other, it is six feet south of the south curb. It is necessary in that block to have a four-inch main and the twenty-four inch main and the sixteen-inch main. The Plymouth Street station is at that point and in addition there are some consumers in the block, and the 24-inch pipe serves the Plymouth Street station and the smaller pipe, the eight-inch and the four-inch and the sixteen-inch I think is also connected with the station and the smaller pipes, the four and the eight-inch are distribution, connected with the general system. My knowledge of the distribution system is such that I could not tell offhand whether such pipes are necessary or not. There might be reasons why I would want all of those pipes there if I were putting them down now. I can think of some. We have the date of installation of the pipes where a field survey occurs on Fulton Street between Johnson & Porter. I cannot say just now how long it would take to compile that information. It would take at least two days to get the information in the shape that counsel requested, if I have in mind all that he asked, correctly. I mean the two or three places that he is asking me for information concern-

ing. It would take at least a day, because we would have [fol. 778] to go and find the number of consumers from the ledgers. There was another question as to the gas stored or sent from the Plymouth Street Station. That of course will require great study and a long time to prepare. As to the necessity of those pipes at the Plymouth Street station, it would almost involve the entire system.

The mains on Fulton Street between Johnson Street and Water Street are indicated as a 3-inch and 4-inch distribution on the east side of Fulton Street between Johnson Street and Water Street, 5 feet west from the east curb; a 12-inch distribution on the east side from Johnson Street to Nevins Street, 7 feet west of the east curb; an 8-inch distribution on the east side from Prospect Street to Water Street, 7 feet west of the east curb; a 6-inch distribution on the west side from Johnson Street to Everett Place, 6 feet east of the west curb; a 10-inch distribution on the west side from Everett Place to Water Street, 6 feet east of the west curb; a 6-inch distribution on the west side from Johnson Street to Water Street, 6 feet 6 inches east of the west curb. On the west side of the street I have a 6-inch main and a ten-inch main, 6 feet from the west curb, 6 inches east if the west curb. The 6-inch main extends from Johnson Street to Everett Place. The 6-inch main changes to a 10-inch main from Everett Place to Water Street. There is a 6-inch main and a 10-inch main on the west side, and the 6-[fol. 779] inch main is 6 feet east of the west curb and the 10-inch main is 6 feet east of the west curb. Throughout the entire distance from Johnson Street to Water Street we have at least two mains—for a larger portion of the distance, we have two 6-inch mains, one is 6 feet east of the curb and one is 6 feet 6 inches east if the curb. They are both the same distance from the curb. That is, their average distance is 6 feet from the curb in both instances. I have one 6-inch main—6 feet on the west side from Johnson Street to Everett Place, 6 feet from the curb. The two mains shown on our exhibit here, the 6-inch on the west side from Johnson Street to Everett Place, and the 10-inch on the west side from Everett Place to Water Street, both being 6 inches from the curb—that can be considered as one main, enlarged from a 6-inch main to a 10-inch main after it reaches Everett Place; it is a continuation of the 6-inch

line, one of the 6-inch lines, and the change in the size occurs at Everett Place. Aside from that one line, I have another line from Johnson Street to Water Street, passing by Everett Place, which is 66 inches from the curb. In other words, I have two lines six inches apart. That is, the center lines of pipe are six inches apart. On the east side of Fulton Street we have between Johnson Street and Water Street one four-inch main from Johnson Street to Water Street. That is located five feet west of the east curb, and then we have a 12-inch main that goes from Johnson Street to Nevins Street. Nevins Street is up here at [fol. 780] the Subway Station this side of Atlantic Avenue. The 12-inch main runs from Johnson Street to Nevins Street. In fact, it runs from Johnson Street to Prospect Street as shown on this plate. That main is seven feet west of the east curb, and from Prospect Street to Water Street it continues as an 8-inch main and is located seven feet west of the east curb. Throughout the entire distance from Johnson Street to Water Street on the east side of Fulton Street, we have a four-inch and a 12-inch main for half of the distance approximately, and then we have a four inch main and an eight-inch main for the rest of the distance. They are located about two feet apart, the centers of the two pipes.

Directing attention to Willoughby Avenue, between Carlton and Vanderbilt Avenue, on the north side of Willoughby Avenue, we have a four-inch main from Carlton to Vanderbilt Avenue, three feet south of the north curb. We have a six-inch main on the north side from Carlton to Vanderbilt Avenues. On Park Avenue between Spencer Street and Nostrand Avenue, we have the following mains on the north side, with their respective locations: a 12-inch main on the north side from Spencer Street to Nostrand Avenue, seven feet south of the north curb, and an eight-inch main on the north side from Spencer Street to Nostrand Avenue, nine feet south of the north curb, and those mains are two feet apart, the center lines.

[fol. 781] On the south side we have an eight-inch main, from Lorimer to Moore Streets, and that is 3 feet 6 inches north of the south curb. That 8-inch main becomes a 10-inch main in the middle of the block between Wallabout Street and Jerry Street, on the south side of Broadway, and

continues a 10-inch main down to Sumner Avenue, and then it is an 8-inch main from Sumner Avenue to opposite Arion Place or Stockton Street, as it is called on this tabulation. That is really one main which is located just three feet six inches from the curb.

On the north side beginning at Lorimer Street, we have an 8-inch main and a 10-inch main, on the north side from McKibben Street to Arion Place. The 10-inch main is 3 feet 6 inches south of the north curb, and the 8-inch main is 9 feet 6 inches south of the north curb. The reason for the number of mains could only be determined after a study of the entire distribution system of the Brooklyn Union Gas Company. Without this study I am unable to give the reason, as they are a part of the entire distribution system. They are serving consumers; that is their purpose. That would be true if 24 of them were all in use. I have made no study during my connection with the Brooklyn Union Gas Company that will enable me to testify as to the necessity for this duplication of mains in the streets to which my attention has been directed. I did not make any study of that fact when I came to collect my data in order to make up the reproduction estimate of mains.

[fol. 782] There are four mains in use on the east side of Summer Avenue between Broadway and Jefferson Avenue. Starting from Broadway, they are: 10-inch on the east side from Broadway to Hopkins Street, 3 feet 6 west of the east curb, and 8-inch on the east side of Hopkins Street to DeKalb Avenue 4 feet west of the east curb; there is a 4-inch on the east side from DeKalb Avenue to Greene Avenue, 3 feet 6 inches west of the east curb, and a 4-inch, east side from Greene Avenue to Jefferson Avenue, 3 feet 6 inches west of the east curb. From Broadway to Hopkins Street, there is an 8-inch and a 10-inch main on the east side there where counsel mentions, but I do not quite see how you can figure that 4 inches apart. One is 3 feet 6 inches—6 inches apart, between the center lines of the pipe, and on the east side that 8-inch main continues from Hopkins Street south down to DeKalb Avenue, and there it becomes a four-inch until it gets down to Quincy Street at least. On the west side, leaving Broadway, there is a 16-inch main, and to Hopkins Street, and then from Hopkins, running south, I have an 8-inch main and a 16-inch main, down to Stockton

Street, and the 8-inch main is 4 feet from the west curb; the 16-inch main is 5 feet east of the west curb; and the 16-inch main is 5 feet east of the west curb. Down at Stockton Street I have three mains, on the westerly side of Sumner Avenue—a 4-inch main and an 8-inch main and a 16-inch main. Those three mains, the 4, 8 and 16-inch continue down to Myrtle Avenue, and then from Myrtle Avenue running south on the westerly side of Sumner Avenue, I have [fol. 783] a 4-inch main and a 16-inch main down to De Kalb Avenue. The location of the 4, 8 and 16-inch mains between Stockton Street and Myrtle Avenue on the westerly side of Sumner Avenue is 4 feet east of the west curb, the 12-inch is 5 feet east of the west curb and the 16-inch main is 5 feet east of the west curb. There is a 4-inch main and an 8-inch main and a 16-inch main on the westerly side of Sumner Avenue between Stockton Street and Myrtle Avenue. The 8-inch main is 4 feet east of the west curb and the 16-inch main is 5 feet from the west curb. I cannot tell the location of the 4-inch main. The information is not given on the calculation. Running south from Myrtle Avenue on the westerly side of Sumner Avenue I have a 4-inch main and a 16-inch main, until it gets to De Kalb Avenue. The location of the 16-inch main is 5 feet east of the west curb. The 4-inch main I haven't on my tabulation. When you reach De Kalb Avenue running south, the 16-inch main continues alone down to Gates Avenue, and from there it is a 12-inch main all the way to Fulton Street.

Wythe Avenue, between Heyward and Clymer Street, on the east side of Wythe Avenue between Heyward and Clymer, there are 6-inch mains on the east side from Heyward Street to Keap Street, 3 feet 8 inches west of the east curb, and 16-inch transmission east side from Heyward, from Heyward to Keap Street, 4 feet west of the east curb; [fol. 784] both run to the same point, Keap Street, from Heyward to Keap, four inches apart. That is just one block from Heyward to Rutledge, running east one block. The 12-inch, on the east side from Hooper to Keap Street, 5 feet 6 west of the east curb, and 12 inches east side from Keap Street to Ross Street, 8 feet 6 west of the east curb; 6-inch east side Ross Street to Clymer Street, 3 feet 6 inches west of the east curb. On the west side, I have a 16-inch, on the west side, from Heyward Street to Clymer,

5 feet 6 east of the west curb; 12-inch on the west side from Heyward to Keap Street, 8 feet 6 inches east of the west curb. That is all except two disused lines not included in the tabulation. I have a 4-inch main from Payne Street to Wilson Street, and a 3-inch from Wilson Street to Clymer Street that are disused, still in the ground. * * *

[fol. 785] There is Kent Avenue, between Heyward and Clymer Street. This is Heyward Street and this is Clymer Street (indicating)—on the east side, 4-inch mains, from Wallabout Street to Rutledge Street, and that is under the sidewalk. It is buried there, but I do not know how safely. I cannot remember if I ever repaired that main. We may have. From an economical standpoint if it is an advantage or disadvantage to have it under the sidewalk, depends on the class of pavement in the roadway and the class of sidewalk that you have to break up, when it comes to repairing it. Considering it from that standpoint, which is purely a matter of dollars and cents, whichever is the cheaper is the most advantageous. It would be cheaper repairing it under a sidewalk. It is an advantage to have it under sidewalks where it is possible to have it. An 8-inch main exists on the east side, Rutledge Street to Hewes Street, 4 feet 6 inches west of the east curb; 6-inch east side Hewes Street to Clymer Street, 4 feet west of the east curb; 20-inch transmission, each side, from Wallabout Street to Clymer Street, 6 feet 6 inches west of the east curb; a 3-inch, east side, from Rutledge Street to Clymer Street, 5 feet 6 inches west of the east curb. That is all on the east side. We have that street pretty well filled [fol. 786] up and also the sidewalks.

The Nassau Works is located in this neighborhood, opposite Clymer Street and Kent Avenue, and down here at the other end of Kent Avenue, between Kent and Wythe and Ruthledge Street is our Rutledge Street station, and between the two, on Keap street, between Kent and Wythe, is our Keap Street station. Further down beyond the Rutledge Street station is the Skillman Street station. This portion of Brooklyn is what you might call a gas manufacturing and storing locality. On the west side of Kent Avenue I have two 20-inch transmission mains. One of them runs from Wallabout to Rutledge, and the other one runs from Rutledge to Taylor Street.

Plaintiff's Exhibit No. 169 in so far as any of those mains are concerned where there is more than one on a street, as shown by this exhibit, I have not made any study to determine whether they are necessary and reasonably useful.

[fol. 787] February 15, 1924.

JOHN T. WHITE.

Cross:

As requested I have made up data showing the dates of installation of mains shown on Defendants Exhibit 15 for identification which vendor company installed, the size of mains, and the main mileage of each vendor company.

(Marked Defendants Exhibit No. 16 for Identification.)

The compilation of the number of feet and equivalent miles of main as of January 1st, 1896 was marked Defendants Exhibit No. 17 for Identification (two sheets).

I have mentioned in a rough way several times the transmission system or mains of the company. I can start at the Scholes Street station at Scholes and Bogart Streets. The beginning there is a 30 inch line which goes to the Wythe Avenue station at Wythe and Kent Avenue. From Wythe and Kent Avenue it goes down through various streets, into sizes 24 and 20, to the Nassau Works. From the Nassau Works it goes in sizes of 20 and 24 in part to the Plymouth Street station and from there down through Hudson Avenue and to the Metropolitan Works to the Citizens Works. When I say in sizes of 20 and 24, I mean part 20 and part 24. That occurs because the old system of mains was utilized to form this loop. From the Metropolitan Works it continues on in 42 inch size through 13th Street down to the territory of the Flatbush Company, and at the Flatbush Company at Clarkson Street, that holder there, is connected to the Flatbush holder, and from the Flatbush holder it goes out in 30 inch size through to the Belmont station in East New York. From East New York it travels in a size of 24 inch through Brooklyn to the [fol. 788] Borough line, and thence into Queens, the same size, the 24 inch, up to Van Wyck Avenue, Jamaica. I

beg pardon, that is wrong, up to the holder at Jamaica, the Jamaica holder. At Van Wyck Avenue *and* 30 inch line is connected to the 24, and that travels through the territory of the Woodhaven Gas Company, the Richmond Hill Gas Company and the Newtown Company, until it eventually gets to the Newtown holder. From the Newtown holder th size of main is 30 inch. It returns to the Scholes Street Station; first to the Borough Line, the Queensboro Line, and then in to the Brooklyn Borough Line, to the Scholes Street Station, making a complete loop of the entire holder stations and territories of the system.

The transmission main runs from the Scholes Street Station down to the Nassau Plant and to the Metropolitan Plant and to the Citizens Plant. The Williamsburg is connected with the Wythe Avenue Station. You will understand that the Williamsburg Works is at the foot of the street, near the waterfront, and the station is about three quarters of a block away from it at the next intersection, that is the Williamsburg Station is connected up with the Wythe Avenue Station. The Fulton is also connected to the loop indirectly by 20 and 24 inch lines. It connects at the point—I have not got the exact point in mind now, to describe the street, but there is a physical connection. Part of the loop leads from the Metropolitan Plant to the Flatbush. This is a continuation of the whole thing through the Flatbush territory, and then out through the East New York section, and thence into the Queens territory. The loop does not pass through the Citizens Works, but the Citizens Works is indirectly connected to it by other means. There are all kinds, but eventually the gas [fol. 789] gets into the loop. It may be relaid from one station to another or one works to another, but the system is such that you can transfer from one to the other, and eventually you get into the loop. The Metropolitan plant is connected with the loop. This main that goes out into the Flatbush territory is really a continuation of the loop. The main from the Metropolitan Works goes to the Flatbush Station, but it is part of the loop. That loop has been in the course of construction since 1910 or 1911.

I came with the company in 1910. That was the time the general scheme was contemplated and the connections arranged that we had in the Brooklyn Union territory, to

form a basis for the entire completion of the loop. The company, I believe, had been supplying the subsidiaries prior to 1910. The last part of the loop was completed in 1923, in the fall of 1923, since 1910 up to 1923 I have been working gradually on this loop, to complete it, taking part of the loop each year, when we could. The loop goes through the territory of the Brooklyn Union Company from station to station. A great deal of the easterly side is in the territory of the subsidiaries. The subsidiaries are in part supplied from this loop. There is a continuation of the distribution system in addition to the loop. In other words, the mains continue right on over the line, the boundary line, from Brooklyn Borough to Queens Borough, that is the subsidiaries get gas, from our distribution system by direct connection with that, as well as connection with our transmission system. The transmission system also supplies the distribution system of the Brooklyn Union too. We have 19 governors in the Brooklyn Union system. With those 19 governors each one is connected to the loop of the [fol. 790] system. In turn the outlet of those governors will be connected to half a dozen points of one governor. I wish to convey the idea—I do not know whether I have or not—so when you ask me whether there are 19 places they are connected, the distribution system is connected in more than 19 places, but the transmission system is connected in 19 places. It flows out of the transmission system in 19 places, but goes into a great many other places in the distribution system.

Prior to 1910 in one instance there was a governor at a locally designated place called Ozone Park. That was the only governor, and outside of that, why, they were supplied by the distribution system to the best of my recollection at this moment. That is all I know. They did not have a holder out in the Newtown district at that time in 1910. That holder was in the course of construction in 1910, to the best of my memory, or was about to be constructed. I believe it was not in use in 1910. There were some governors in the territory in 1910 when I came here, in the Brooklyn Union territory. They had a high pressure system then to a certain extent and that high pressure system is now a part of our loop.

That high pressure system, the one that was there in 1910, at that time was the basis for the continuation and construction of the loop as it now exists. There were several governors in the system in 1910. Just how many now I have not got clearly in mind. The purpose of building the loop was for the transportation of gas in large volume and to meet our distribution requirements as they developed. There were indications of greater volumes of gas being necessary by reason of growth in certain sections, and this upon being taken up by our engineer and our other en- [fol. 791] gineers at the time, it was decided the most economical way to accomplish the problem when it arose. I did not take part at the early conferences, because I was not here. At the later ones I did. The plan had been consummated before I got here. In a tentative way it had been talked about and the basis had been formed for that method of construction—I assume from what I had heard in casual conversation with my associates. In principal it had been adopted. In deciding as to whether it was advantageous to construct the loop there was considered the necessity of supplying the subsidiaries, and connecting up with the Newtown holder then under construction. That was one of the factors in the consideration. It would not have been possible to supply the consumers of the Brooklyn Union Company alone without the loop by using the distribution system alone, taking into consideration of course, the high pressure system that we then had, because that was only in sections of the territory.

From my recollections of the studies made at that time and the general information that was obtained, I think the conclusion was arrived at that it was advantageous to do this in it- entirety. Now, whether we segregated the territory of the Brooklyn Union in that consideration, without taking in the entire system, I do not recollect just now. I am a little hazy on that. It would be my best judgment, that the fundamental reason for construction — the loop was to supply the gas to the entire Brooklyn Union System. The system was considered at that time, I am quite positive.

Taking the Brooklyn Union consumers alone, disregarding entirely the subsidiaries, in order to supply those consumers, it would not be necessary to maintain a loop around the distribution system or throughout the distribution sys-

[fol. 792] tem alone. It could be accomplished, but with a greater cost. That is, the capital outlay would be greater to supply them through the distribution system alone than it would to build a loop around it. To supply them in the present low pressure distribution system which we had up to that time would require the erection of holders, and you would get your pressure from your holder weights. That, of course, would be an increase of the capital outlay. That is, if they did not have a loop, the Brooklyn Union would have to build some holders throughout its territory. Newtown holder and Flatbush holder gets its high pressure from the holder stations from the compressors.

I have some extensive new constructions of mains within the last three or four years—opened some new territory. There has been quite considerable extension in the East New York section. Now I will show you a plate in the map, No. 39 which takes in Ralph Avenue, Howard Avenue, Saratoga Avenue and Hopkinson Avenue, and the intersection streets, which is in part new construction in the last few years. There are many other places which I can refer to which in part will be new construction in the last few years. This territory here (indicating) is that section of Brooklyn which is called East New York and this is a section which is building up rapidly. I would hardly call it a new subdivision. It is locally designated as "East New York Section." Between the Hunterfly Road and across Eastern Parkway, and across into Brownsville, in some streets there they did not have gas until two or three years ago. This section that is shown on Plate 39, up until two or three years ago had practically no gas, only parts of the section [fol. 793] shown on Plate 39 had no gas. I can show you other plates in the same way. Each plate will give a part of it which was constructed in the last few years.

Pacific Street—I have not laid that main within the last two or three years, that is an old street. That has been there for quite a while. The one on Dean Street is also an old street, and Bergen Street also. The new streets are—Herzl Street—that is one which you questioned me about and that has a 6 inch main on the east side of the street and none on the west. Douglas Street looks like a recent installation from memory to me. I have been there at times and that has a 6 inch main on the westerly side and

none on the easterly. Amboy Street is a recent installation—within the last three or four years—five years maybe and that has a 6 inch main on the easterly side and none on the westerly. I cannot tell you whether there are any houses on the westerly side of that. Part of Hopkins Street is a new installation, from Sutter to Lavonia. That has a 12 inch main on the westerly side of the street and none on the easterly. Barrett is a recent installation, within five years from Pitkin to Lavonia Avenue and that has a 6 inch main on the westerly side and none on the easterly. Saratoga Avenue is a recent installation from Pitkin Avenue to Lavonia and there is a 6 inch main there on each side of the street. I cannot remember if I installed both of those recently or if one of them was previously there. One of the 6 inch mains was put down recently. I can recall one of them, in a way, but whether I put them both down or not I do not know. No recent distribution has been made on Sutter Avenue. The 30 inch transmission main runs through Sutter Avenue; that is part of the [fol. 794] loop. The 30 inch transmission main was laid prior to 1910.

The mains on Blake Avenue from Howard Avenue to Hopkinson Avenue I would say that has been in part of that run—has been constructed in the last five years and that has a 6 inch main on the northerly side of Blake Avenue and none on the southerly. Dumont Avenue from Howard to Hopkinson Avenue, that in part has been constructed within the last five years or so, and that has a six inch main on the northerly side of the street and none on the southerly. It is the practice at the time the main is laid, to consider the consumption in that particular territory and extend one line if that is adequate for the purpose. Most of that territory is apartment houses, stores underneath—four or five story apartment houses, with some breaks, of course, of some vacant lots. This is the roughest kind of an idea, because it is difficult for me to remember all the streets in this section. The map does not show all the specials. It only shows specials at the intersections of the streets. It is our custom usually to put a cross at the intersections of the streets as a four way. Where it is necessitated by underground tenants,

that would be in the nature of an obstruction. Then we would have to use, in addition to the crosses and the drips which you mention, also bends to get around the obstruction. If we had no other sub-surface tenants, our only specials that we would use would be our crosses at the intersections of our streets together with what drip pots were necessary. If there were no obstructions, that would be necessary. We do not put a drip in to correct a condition of sagging. We put in a drip at a certain point in a line to gather the condensation where we are obliged to have [fol. 795] a certain inclination to the line by reason of the grade of street, but wherever the line reaches a low point, we put in a drip. There ought to be one there for an inclination of a line at a certain distance.

Plate No. 41 is bounded by Pitkin Avenue, New Lots Avenue, Berriman Street and Alabama Avenue. The mains in this territory bounded by those streets have in part been recently laid. What part of them have been recently laid would be difficult for me to pick out, but I know that some of these have been in part constructed in different places, as development occurred, building activity. Take Blake Avenue, from Alabama Avenue, running easterly to Berriman Street, some of it has been laid in the last five years or so. I cannot tell which part, from memory. On the northerly side of Blake Avenue I have constructed a 6 inch main and on the northerly side of Dumont Avenue from Alabama Avenue to Berriman Street, I have also laid a 6 inch main and then on the southerly side for a distance of seven blocks between Van Sielen Avenue and Cleveland Street. I have a 12 inch main. That was constructed within the last five years or so. That is the only main that I have on the southerly side of Dumont Avenue, between Alabama Avenue and Berriman Street. The reason why I should have a 12 inch main on the southerly side of Dumont Street between those two points, Van Sielen Avenue and Cleveland Street is in the nature of a supplemental line to reinforce the pressure in that section. That gets pressure, putting in a 12 inch main because it is a part of a plan, a tentative plan which we have and, when the opportunity presents itself, we put in part of a larger line where we think it is necessary or about

[fol. 796] to become necessary. We build it up year by year so that when the time comes when that section is fully developed, we are able to meet conditions. The necessity for this is indicated by the pressures which are taken hourly. The 12 inch main is connected at all points with the 6 inch main so that the existence of the 12 inch main there would ultimately increase the pressure. We extend that line to a point where it will receive a greater volume of gas and accomplish that. In part, I am laying that 12 inch main now with the idea of providing for future requirements. Some of the parcels on Sutter Avenue, mains have been laid there recently between Alabama Avenue and Berriman Street. I should say, some part from Schenck to Berriman, and that is in part a 6 inch main and a 4 inch on the northerly side of the street with the exception of one block and there I have a 4 inch main. I have a 6 inch main running for a short distance, and then it is reduced to 4 inches for one block, and then increased to a 6 inch main at the next block, and then it continues on for six or seven blocks. It is 21 blocks from Alabama Avenue to Berriman Street on Blake or Dumont or Sutter. In most instances I lay a pipe on one side of the street, and that usually is a 6 inch main.

Plate No. 37 is bounded by Eastern Parkway, Albany Avenue and Franklin Avenue and contains in part mains that were laid within the last five years. I have been laying mains in this section which is locally designated as the "Spotless Town" section part of it. Some of it has been laid in the last five years. This of course is finished now. That is Kings County Penitentiary at this point and Crown [fol. 797] Street, in part. I have laid mains from Nostrand Avenue to Albany Avenue within the last five years. On Crown Street that main is a 6 inch main on the southerly side of the street and none on the northerly side. The main on Carrol Street is from Nostrand Avenue to Albany Avenue. That is a recent installation, within the last five years or so. That is a 6 inch main on the southerly side of the street and none on the northerly side.

President Street in part, from Rogers Avenue to Albany Avenue has an 8 inch main on the southerly side of the street from Rogers Avenue to Nostrand Avenue. It then

runs to the northerly side of the street, crosses over and runs to the northerly side of the street from Nostrand Avenue to New York Avenue. It is an 8 inch main on the northerly side there from Nostrand Avenue to New York Avenue and then a 6 inch main from New York Avenue to Brooklyn Avenue, and then it is a four inch main from Brooklyn Avenue to Kingston Avenue. Then again an 8 inch main from Kingston Avenue to Albany Avenue, all on the northerly side of the street from Nostrand Avenue to Albany Avenue. There is no main on the opposite side of the street.

Defendant's Exhibit No. 15 for identification received in evidence.

Defendant's Exhibit No. 17 for identification received in evidence.

The 24 inch distribution main on the south side of Gold Street and the 16 inch distribution main on the same side of the street, on Plymouth Street, between Gold Street and Hudson Avenue, both of which mains are six feet south of the south curb, are in the same trench and are the same [fol. 798] distance from the curb. It is obvious that one is under the other from the relative position of each. I don't know which is under the other and I don't know how far under they are. I have records to show that.

Directing attention to the mains on Fulton Street between Johnson Street and Water Street on the West side of Johnson Street, there was a 6-inch main from Johnson Street to Everett Place six feet east of the west curb, and a 6 inch main, distribution main, 6 feet 6 inches east of the west curb from Johnson street to Everett place, and then one of those 6 inch mains becomes a 10 inch main from Eveverett Place to Water Street. Those two 6 inch main- running from Johnson Street to Water Street, or to Everett Place are roughly about three quarters of a mile. There are two 6 inch mains paralleling each other up to Everett Place. Those two 6 inch mains run within six inches of each other for about ¾ of a mile, that is, 6 inches apart from their centers, measured from the center line of the pipe. For a six inch pipe I have estimated that it would be necessary to dig a trench 1.83 feet and that, in inches is 21.9. There would be some overlap. Just now it is

rather difficult to figure, without going into a long calculation. In taking these into consideration, we must bear in mind that this figure I have given you is an average figure of three feet of cover throughout the entire system which is supposed to take up any irregularities as to the conditions that are encountered, and covers conditions of this kind with many others. I cannot compute it without having the outside diameters of the pipes and the space they would take in the trench and that I have not before me. I don't ex- [fol. 799] actly know, from memory, the outside diameter of a 6 inch pipe. I don't carry all the outside diameters in my head. They run pretty generally the same; there isn't any great variation between them, but I have other sizes to keep in my head, outside of the thickness.

Directing attention to the main which is 6 feet 6 inches east of the west curb, the inside line of that trench would be 68 inches from the curb. The trench holding the 6 inch pipe would be 89 inches to its farthest side. The first trench would be 89 inches. That is 68 inches plus 21. The center line of our trench carries our 6 inch pipe. That point 72 inches is right in the middle of a 6 foot trench, and the six foot trench is 21.9 inches wide. Consequently, the outer edge of our trench is 82 inches. These two trenches would overlap to the extent of 14 inches, which is the difference between 82 inches and 68.

From Everett Place to Water Street I have the same situation. The 10 inch distribution main is 6 feet from the cu*br* and the 6 inch main is 6 feet 6 inches from the curb. Those trenches would overlap to the extent of 17 inches for the reason that our 10 inch trench must have a width of 2.17 feet for 26 inches. I have a wider trench for our 10 inch than I have for our 6 inch.

On the east side of Johnson Street, our 12 inch main, which is 7 feet from the curb and runs to Prospect Street instead of Nevins as shown on the exhibit, and the 4 inch main from Johnson to Water Street 5 feet from the curb, those two trenches would overlap about an inch.

On Sumner Avenue between Broadway and Jefferson Avenue from Broadway to Hopkins Street on the east side [fol. 800] of Sumner Avenue there is a 10 inch main 3 feet 6 inches from the east curb, and an 8 inch main 4 feet from

the curb, and the trenches for those two pipes would overlap. They are 6 inches apart. The 10 inch main is 3 feet 6 inches from the curb and the 8 inch main is only 4 feet from the curb. Those two trenches would overlap. There would be some inches of overlap there, but I cannot just figure it now.

The exhibit which is marked Defendants Exhibit 16 for Identification shows that those two pipes were laid at the same time. From Hopkins Street running south on the west side of Sumner Avenue, to Stockton Street there is an 8 inch main 4 feet west from the west curb and a 16 inch main 5 feet east of the west curb and those two trenches would overlap about 16 inches. From Stockton Street to Myrtle Avenue on the westerly side of Sumner Avenue there is an 8 inch main 4 feet east of the west curb and a 16 inch main 5 feet east of the west curb. The same location as in the previous question. Those trenches would overlap 16 inchess too. The distance from Broadway to Hopkins Street on the east side of Sumner Avenue is about 160 feet and from Hopkins Street on the west side of Sumner there are two trenches that would overlap as far as Stockton Street, approximately 1,100 feet. Then there is also an overlapping between Stockton and Myrtle of about 200 feet.

On the east side of Wythe Avenue from Heyward to Keap Street I have a 6 inch main 3 feet 8 inches west of the east curb and a 16 inch transmission main 4 feet west of the east curb. There would be an overlap of those two trenches of about 20 to 22 inches. That overlapping would prevail from Heyward to Keap, approximately 1,200 feet. The 6 inch main from Heyward to Keap Street which is 3 feet 8 [fol. 801] inches west of the east curb, would also overlap on the trench for the 12 inch main which runs from Cooper Street to Keap Street, and that would be between two and three inches overlapping. The trench that I would dig for a 16 inch transmission main would also overlap the trench for the 12 inch main, the 16 inch transmission main being four feet west of the curb and the 12 inch main being five feet 6 inches from the curb. There would be an overlapping there of about a foot. In that particular case if I dug a trench for a 16 inch transmission main, I could not put the other two pipes right in the same trench. I would not have caulking

room. You would have to dig larger bell holes than you would for the 16. In other words, you could not get between the pipes. All of this overlapping would be accentuated by our bell holes and would be made more extensive. Taking *a* bell holes 3 by 3 for our 6 inch pipe, 4 by 4 for our 12 inch, and 4.5 feet by 4 for our 16 inch, those would overlap the trenches provided for the other pipe. On Kent Avenue between Heyward Street and Clymer Street, there is an 8 inch main from Rutledge to Hewes Street on the east side of Kent Avenue four feet 6 inches west from the east curb, and a 3 inch main from Rutledge to Clymer 5 feet 6 inches west of the east curb, and those trenches would overlap over ten inches. The trench for the 3 inch pipe from Rutledge to Clymer would also overlap the trench for the 6 inch pipe which runs from Hewes to Clymer Street located four inches west of the east curb. That same trench that I dug for the 3 inch pipe would also overlap the trench for the 20 inch transmission main from Wallabout to Clymer Street, which is 7 feet 6 inches west [fol. 802] of the east curb.

In the location of Franklin Avenue between Flushing Avenue and Wallabout Street our trench for our 4 inch main on the west side of Flushing to Wallabout would overlap our trench for the 16 inch distribution main. The 4 inch main being 3 feet 6 inches east of the west curb and the 16 inch being 4 feet 6 inches west of the east curb. The trench for the 16 inch distribution main would overlap the trench for the 12 inch distribution main between the same points about 14 inches; the 12 inch main being 6 feet 6 inches from the curb on Flushing Avenue between Skillman and Franklin Avenue. In that case the trench for our 20 inch transmission main would overlap the trench for our 3 inch main which is 4 feet 6 inches from the curb, about four inches and the trench for our 12 inch transmission main would overlap the trench for our 3 inch main about 12 inches.

On the south side of Kkillman Street the trench for our 16 inch distribution main would overlap the trench for our 12 inch distribution main about 6 inches. I have not computed, in making my estimate, the extent that the trench necessary to be dug for one pipe would overlap or infringe upon the trench which it would be necessary to dig for another pipe. In each one of these cases I have dug a trench a

certain prescribed width for each pipe and that is included in the cost of this estimate of mine. The cost of backfilling that trench is included. Wherever one trench would overlap the trench of another pipe, my estimate covers the cost or includes the cost of excavation in each instance and backfilling in each instance, of an average depth. My width is also an average; in fact, the whole computation is average. [fol. 803] I mentioned using an average width, by that I mean the average width of the trench necessary to put in different size pipes, different size mains. In fact, many of the trenches which I actually dug are wider by reason of intersecting connections and other sub surface structures which we encounter, and in some cases they are wider by reason of the fact that they fall down. That is to say, the sides of the trench fall down, as in the case of storms. They are not much narrower, but there are some narrower, in some cases, but not very much. My practice for the past thirty eight years governed me in taking that width. I have not read Mr. Duncan's testimony in the Kings County Case, nor have I conferred with him in any way as to the necessity for the width of the trenches. I inquired the price for labor he way paying, but I did not confer with him in regard to any of his work or how he performed it. I did bring with me the actual cost incurred by the company of disturbing the pavements, at a former hearing.

Our records show that the actual cost to the company for paving, paid for by the Brooklyn Union since 1895 to June 1st, 1923 is $221,303.73. Our records also show that the actual cost paid for paving over services of the Brooklyn Union Gas Company from 1895 to June 1st, 1923 is $293,518.57. As to the paving paid for by the predecessor companies or the vendor companies prior to 1895, that information was taken from the books on file in the auditor's office. He has some information there, or tabulations which give the figure $735,000. I asked him for this information and he gave it to me. I know all about the estimated figure. I could not tell you what the book is, but I can tell you how [fol. 804] the information is obtained. Mr. Payne got it for me.

The title of the book is a Franchise Tax Report that this information is on, that the auditor took this from. It is a figure that I gave him f*ro* the purpose of the Franchise Tax

Report. It is a book or a pamphlet that goes to the Franchise State Tax Department. He has not, really, any record for the company; it is the record that is made up especially for the State Tax Commission. In making up any figure showing the cost of paving disturbed prior to 1895, I have the mains. A similar tabulation to the one we have just given in now, which is Defendants' Exhibit No. 17 for identification, which shows the total number of mains in ground at January 1st, 1896, giving the number of lineal feet of mains and the sizes of them; and the other data is the knowledge I could obtain, from the nature of the pavement that existed in Brooklyn prior to that time. The number of feet that was in existence on January 1st, 1896, enables me to reach the cost paid by the Brooklyn Union Company for the pavement over services by assuming a certain class of pavement in Brooklyn existing at the time these mains were laid. I assumed that on all of these mains there was pavement. I assumed cobble on sand pavement existed when they laid these mains. Our estimated figure of cost is the result or shows the cost of disturbing that kind of pavement over that number of mains approximately 739 miles, that is, I mean my estimate for Franchise Tax purposes which I am now giving. That same estimate, however, in those figures does not appear in my exhibit in this case. I have not made that same sort of an estimate for our reproduction figures in this case. They are separate and apart.

[fol. 805] In looking over all the records that I could get from the Department of Highways, I came to the conclusion that that kind of a pavement existed over those mains, but most of the streets that were laid in improved roadway, that is, all they had at that time was cobble, and I assume all the mains were laid under cobble. I do not know what practice prevailed in the vendor companies. I think that no such practice was followed out, but I assumed it was all laid under pavement. I do not know as I have ever read the affidavit made by the former Secretary Edward Ludlam to the effect that in a great majority of cases the mains were laid prior to paving. I have heard it spoken of, but I have never read it. I did not look it up after I had heard it spoken of and I did not look to see if I could locate the affidavit. It was not spoken of in my hearing in regard

to paving, but the Ludlam affidavit was mentioned by someone, and I got it in the back of my head somewhere that his name was mentioned, but just what it was about, I could not say. I think Mr. Ludlum was one of the officers of one of the vendor companies. I did not know him.

Our figure for services, paving over services represents the actual amount that was paid by the Brooklyn Union Company from 1895 to June 1st, 1923, in fact the actual cash. It is not the practice of our company to charge the consumer for some paving over services in Brooklyn. We charge very rarely, unless the extension is way beyond the usual length of an installation, at June 1st, 1923 up to that time. Prior to that time, there was an arrangement in regard to charging—I have not got it clear in my head, but there was some arrangement. I would have to look that up [fol. 806] to give you the facts precisely about that. In reconstructing these services, I assumed an average length of 41 feet, just inside the foundation wall. The consumers did not pay any part of that on June 1, 1923, but I will have to refresh my recollection on that in regard to some—a couple of years back. I am not sure, there may have been some rare instances where they paid, and then again there may have been several instances. I am not clear on that, to be quite frank with you. As to service installation I will have to refresh myself on that. As to paving, I can only answer on that as to the time I have been with the Brooklyn Union, and I can tell you with perfect confidence that during the time I have been there, there has never been any charge for that. That is a distinct item to the best of my recollection. There may be instances where we have to charge our customers for services, but as I said before, I will have to refresh myself on that. By that I mean, for a portion of the pipe. There may be some contribution there.

Our company made a report to the State Tax Department for the year ending December 31st, 1922. I have made charges to the consumers for the installation of services. In 1922 we charged between the fence line limits for one and one quarter inch services 60 cents per foot; for one and one half inch services 65 cents per foot; for two inch services 80 cents per foot, for three inch services 95 cents per foot, and over three inches in diameter was based on the actual cost of installation. In other words, the con-

sumers in the year 1922 paid for some portion at least of the installation of the service from the house line in through the foundation and that portion that the consumer had paid for is included within the 41 feet that I have assumed [fol. 807] as an average distance. The number of feet to be charged to the consumers was reported to the auditor by the distribution department. I think I had a hand in fixing the charge that I made at the time, at a conference. I arrived at the charge of 65 cents by taking part of the cost of the entire service, of the average length and adding to it some organization cost, I think, if my memory serves me right. I took a certain percentage of the total cost of installing the service including some organization charges, that is from memory. The total cost including pavement was not disturbed as I think the pavement was eliminated. I think I did the major part of the calculation in establishing the cost. Just how I arrived at it I don't recall. I have gone through many other calculations and it is rather hard for me to recall the details, but I shall have to look into it and furnish you with whatever you want. Despite the fact that the consumers have paid a part of this cost of installation, I have included it in our estimate here.

I knew the consumers had paid a certain portion of this money for the installation of the services when I compiled my estimate. In conjunction with other information, I knew my estimate here was to be used in the trial of this action. I knew from the conferences that I had had with Mr. Dykman, Col. Miller and Mr. Shea that the company were to contend in this action that they were entitled to a return upon the reproduction value of their property. The consumer has paid only for a couple of years, [fol. 808] if I remember rightly, and that of course I shall have to confirm and refresh myself on, for a part of the installation. That is to *to* say, they have not paid the entire cost of that part of the installation with which they were charged. There is a question of ownership. We maintain that service so long as it exists, and there is no reason in my mind why it should not be included in this reproduction cost. Our operating expenses include the cost of maintenance. I rather gain the impression that I not only included it because I had to maintain it, but it was

only a partial contribution and it has not occurred over the entire period of the existence of the Brooklyn Union Gas Company. I am pretty positive as to that because I think this was only a temporary arrangement we made for a couple of years. Since 1920 when the prior case was tried, I had been charging it, and we are charging it now. I was never successful in obtaining any information in regard to what the vendor companies charged the consumers for installation of the services. The records on that are very meagre, in regard to what they have done in that respect. I have included in my estimate the cost of reproducing all of the services installed by the company or now owned by the company, irrespective of whether they were installed by the vendor companies or whether they were installed by the Brooklyn Union Gas Company, either to the vendor company or the Brooklyn Union Gas Company.

[fol. 809] February 18, 1924.

JOHN T. WHITE

Cross:

During the time that I have been with the company from 1910 to 1919 there was a certain amount charged, a part of the installation a part of the cost per foot, and from March 20, 1920 to the present time they have been charged a different sum. From 1912 to 1920 for 1¼ inch pipe I charged them 15 cents per foot; for inch and a half pipe 15 cents per foot; for 2 inch pipe 25 cents per foot; for 3 inch pipe 50 cents per foot. From March 20, 1920 to the present time, to June 1st, 1923, inch and a quarter pipe was 60 cents per foot; inch and a half 65 cents; two inch 80 cents and three inch 95 cents; it being understood that these prices were charged for that part of the service pipe on the private property of the consumer or, in other words, within the lot line. I don't know how much I have obtained from the consumers for this work from 1910 down to the present time, not at this moment.

We did not charge the consumers for paving in 1916, 1915 and 1917. The figures I have quoted you are just the cost of installation, the average cost per foot, arrived from a large number of installations made. It is a contribution

by the consumer. He pays a part of the charge on his private property and not the entire cost of the installation at all, but only part of the per foot cost.

Referring to the Brooklyn Union territory the consumers have not paid or contributed for any part of the installation [fol. 810] of our mains, that I can not recollect at this time. Our practice in that regard is to lay the mains as the territory develops, and I can not recall a single instance now where a charge has been made. It would be a very rare case if we did. As to the report to the Public Service Commission that I did make such a charge in 1920, 1921 and 1922, I have nothing to do with vamping out that report as it goes forth, although I may furnish some information in connection with it, but I do not recollect any such information being furnished by me for that purpose.

Affidavit made by Edwin Ludlum on April 10th, 1900 offered in evidence objected to by plaintiff's counsel. (Marked defendants' exhibit No. 18 for identification.)

It is not a fact that the rust, decay and depreciation of gas pipes, especially by electrolytic action in the city of Brooklyn is great. The rust, decay and depreciation of gas pipes, especially by electrolytic action in the city of Brooklyn was not great in the year 1910. I was not here in 1900. From observations that I made in 1910 and up to the present time, I know that it could not have existed in 1900. I know there is a record of the fact that Mr. Ludlum was Secretary of the Brooklyn Union Gas Company in the year 1900 and for some years prior thereto. It is in some books that I have gone over and I have noticed the name mentioned. I never met him. I never read the affidavit of Mr. Ludlum, marked Defendants' Exhibit 19 for identification to which Mr. Cummings has called my attention. I have heard it mentioned but I never read it. The opinion of Mr. Ludlum on that question would not have any effect [fol. 811] upon my own judgment and if it should appear that Mr. Ludlum while Secretary of this corporation was of a contrary opinion and was of the opinion that a very large item of depreciation was attributable to the cause referred to by Mr. Cummings, that would not modify or change my opinion. The complaint made by the Brooklyn Union Company signed by its President James Jordan is not the

present Mr. Jordan but his father. He is dead. I do not recognize his handwriting. I have seen it infrequently over the term of years that I have been with the Brooklyn Union Company, but not sufficiently often to identify the signature. I did not know Mr. Jordan. I think it was in 1911 when he died, one year after I came with the company. He was President of the company when I came with them. He didn't employ me.

One Fred S. Benson is dead, the one we called the old Colonel. The other Fred S. Benson is operating the Nassau Works; he is the Engineer of the Nassau Works, but I am inclined to think this Fred S. Benson is the one deceased. The one now living is a son of the other Colonel Fred S. Benson.

Insofar as the reference is made to the mains and services depreciating by reason of rust and electrolysis, I would say no, it is not in accord with my opinion. The fact that if it should afterwards appear that this statement was made by the present Mr. Jordan's father, who was then president of the company, that would not influence me any or change my opinion as to the condition of the mains and services for certain reasons. To the best of Mr. Jourdan's ability no doubt, as a good president generally does, he kept well informed of the conditions of the company when he was [fol. 812] President but he has to rely on second hand information, in obtaining stuff of this description. As I find the system today, my logical conclusion is that Mr. Jourdan then the president of the company was misinformed as to those conditions. The complaint is sworn to by James Jourdan and he states there that the complaint is true to his own knowledge, except as to those matters therein stated upon information and belief and as — those matters, he believes them to be true. The portion that was called to my attention must have been stated upon information and belief. It doesn't say so, but I know that must have been. I think that it was really information that he gained upon information and belief but failed to state it in the complaint because I cannot conceive of the president of a company going out and walking along and examining mains and services, when he has other more important duties to perform. I am basing my opinion entirely upon ordinary commercial practice, and my knowledge of the way public utilities are

handled and have been handled within my experience for the last 38 years.

Complaint before Tax Commission verified by Mr. Jourdan admitted in evidence and marked Defendants' Exhibit No. 20.

My opinion would be the same as I have formerly testified to as to the conditions, because I know what I have viewed, and I have actually viewed the system of both the mains and the services, and I speak from actual knowledge.

The rates for the paving over the mains were charged by the Department of Highways at June 1st, 1923, in the Borough of Brooklyn. The rate for sheet asphalt was $6.50 a square yard. That included the asphalt and the concrete foundation. That price prevailed in May 1921, it was more, a dollar more. In April, 1920 it was the same. In March 1918, it was $2, without the concrete foundation, and with [fol. 813] the concrete foundation it was $4. It jumped from $4 to $6.50 in 1918 to 1923. I laid some mains in 1918. I actually paid in some cases $4. If I was to disturb that same pavement today and restore it, it would be $6.50. I have got one rate for other periods here—for 1923, but it is incomplete, so I don't think we had better use it. I see there is something left off there. I can go back only as far as 1916. The bulk of the asphalt pavements covering the mains on June 1st is now granite and asphalt. Our charges here did not include the restoration of pavement that is granite and asphalt and granite pavement.

By the greater extent I shall give you the larger number of square yards. I have cobble as the largest amount disturbed for construction in square yards. On this tabulation that includes the running back over a period of years when the vendor companies installed their mains. That is the reason that cobble has the greatest yardage there disturbed. It includes as much as I could get information on the subject from records. I took the date of laying of mains from our records and then I looked in some book that is kept by the Highway Department and found out the date on which the pavement had been put in on that street. I then took the year the main was laid and the year the pavement was laid, in that case, wherever we had record of the laying of the main and the year of the laying of the pave-

ment. Our records as to the year in which the main was laid are extended. They are as far as we can glean from the records which are in evidence here of the vendor companies and of mains that were laid since the Brooklyn Union, as we have them, and in many cases I have been un-[fol. 814] able to get all this pavement because I did not have all the information on both sides of the question; I did not have the years the mains were laid, nor did I have the years the pavement was laid. Sometimes I had one, but in order to establish the thing and to use it for this purpose I had to have two. I did not conclude any pavement had been disturbed by the vendor companies in laying their mains. I took what I could obtain from matching the records this way. I haven't got it separated in the notes before me. The Brooklyn Union Company distinct from the vendor companies. I haven't made any segregation like that. 98,000 yards in all in round figures of cobble were disturbed according to my compilation but, that takes in some of the Brooklyn Union and some vendors and in both cases it is incomplete. The price charged by the Bureau of Highways as of June 1st, 1923 was $2 per square yard. That price prevailed for cobble from May 1st, 1921. The different charges that have been made in so far as my investigation discloses it, i. e.: May 1st, 1921 they charged $2 per square yard; after Aprl 1st, 1920 they charged $1.50 a square yard *a square yard;* March 15th, 1918 they charged $1 a square yard; July 1st, 1916 they charged 75 cents a square yard. I arrived at the total number of yards by taking the trench widths with the bell hole and getting an average, that is, I took 4.78 width of trench for 16 inch pipe. For 6 inch 3.62 feet width of pavement. That pavement extends 9 inches on each side beyond the limits of our trench. I considered taking nine inches of pavement on each side of the trench for a 6 inch pipe and the same for the 4 and 3 inch. The 16 inch was 4.78 feet. The width of the pavement is 4.78 with the over-cut. Referring to a 16 inch pipe, and the trench for it, the overlap there or over-[fol. 815] cut, was 2.67, that is, the width of the trench without the bell hole; the bell hole figure on that will make that slightly larger. I dug or overcut the trench, the pavement nine inches on each side, all the way through. On all cobble there is an overcut of 9 inches on each side irrespective of

the width of the trench that is caused by traffic. The wear of the trench and the falling down of the trench and the traffic conditions that occur after the trench is filled in; it is temporarily repaved, but at the same time the edges of the trench are depressed by the settlement of the back fill and such traffic as it encounters before its restoration which may be a month, or maybe two months or sometimes four months. That figure of 9 inches is based on my experience of that wearing down. I do not actually cut the pavement back 9 inches when I dug our trench, but in the course of time it becomes worn back that far, and when it is restored they take an additional amount off of that, off of the entire amount that has been disturbed, which averages 9 inches on a side in all. I am testifying to the City practice in the restoration of the pavement. We just cut as per the dimensions that I have given for the trenches. That is, I do not over-cut at all but the Bureau of Highways, when they come there to restore this spot, that is when the overcut occurs. That is, they restore the nine inches beyond our trenches, that is our experience. They cut it. They cut it in order to make a binder to bring the two together by reason of the fact that the edge of the trench, in some cases by the fill, and in other cases by the traffic, is inclined down toward the refilled trench or back filled trench, whatever way you want to term it, and they charge us that additional for the [fol. 816] over-cut. I did not get the amount that had been contributed by the consumers per year, for installing services, that is quite a long operation. I could not do that in the limited time. I have in my schedule here for pavement disturbed in construction over mains $1,043,487.56. I cannot split that up into the different years. I have no data showing the amount of pavement disturbed each year. I have got it by the years, but those years are not separated. There is no segregation there. But I have the whole thing according to parcel, as I picked it from the records, and that of course, does not occur in consecutive years. I have got the thing arranged in such a form that it is all together. I have not even got my arrangement with me, but you can visualize it when I tell you that I have the parcel of main, the year it was laid, and the year the pavement was laid. I have not with me the book which shows the years the various pavement were laid. I mean the City book supplied by

the City. There are many books covering it. They publish one each year; it is a progressive record. It is just a tabulation of the streets paved in the Borough of Brooklyn, and it is issued by the Department of Highways of the Borough President's office. Those are the small black books I had with me on the stand a few days ago. After I got the date of the laying of the mains from our record I then went to some of these books and looked in that year, to see if the pavement was in existence at that time, and then traced it on down. I got the name of the street and the particular parcel where the extension occurred, then took that part of the location of the paved roadway that was indicated in the Borough President's record and used that as the basis. [fol. 817] Those pavements have been changed frequently, that is, they were in the old days cobble stone, some of them, and have since been changed and asphalt been laid. I did not trace it on down to the kind of pavement that was in existence at the time the main was installed, and then the kind of pavement that is in existence today. I used the pavement that was in existence at the time the main was installed. I paid no attention whatever to the pavement that exists today. Those books are issued by the Department of Highways, to me. I have them in our files. A good many of the mains or quite a few of the mains I am unable to ascertain dates for, when they were laid. I did not include anything for something that I could not ascertain. I could not include any of the mains that I ascertained the existence of from this field survey because I did not have the date the main was laid. I cannot give you the number of feet of main that belonged to the vendor companies, that were included in my computations. I have them there, in with the Brooklyn Union mains combined. As to the services, I ascertained in that the quantity of pavement necessary to be disturbed by knowing when the service was laid and when the pavement was laid, following out pretty much the same method as to the mains. The record of the date when the services were laid is not more complete than my data as to when the mains were laid. We have there some incomplete records, insofar as the dates of installation of services are concerned. We have many where we were unable to get that date. We have no dates of installations. We have in fact very few books of the vendor companies

on service installations, if any, from memory but we have the dates of installations or the location of the services in [fol. 818] the Brooklyn Union. Since I have been there, and in those cases of course we have the dates, that is, the dates since I started my card catalog and since we began installing services from 1912 or 1911. I have forgotten now just what year it was—down. We have those dates. I have not any date prior to 1910 to know when the services were installed. We have some, but not many, that is comparatively not many, but of course I know that a service did not precede a main; there had to be a main there first. Generally and without exception I would say a service can precede a main physically, but practically, as we install services, it would not precede a main. I ascertained the quantity of pavement to be disturbed over our services, or that was disturbed over our services by separating the long and short services, and assuming a certain distance from the curb to the location of the main. Our services are presumed to be 41 feet long. I did not take each individual service and try to ascertain the distance from the main to the curb covering that particular service. I took up the average width of paved roadways in Brooklyn. I segregated the average width of paved roadways in the Brooklyn Union territory, taking the square yards of paved roadways and the linear feet of paved roadways; the linear feet into the square yards gives you the average width. Having ascertained that, which I think is 31 feet plus in width for the paved roadway—I then took the long and the short services and, using a tap hole of 3 by 3 over each service for the purpose of the main connection and short trench to the curb line, and for the long service a 3 by 3 tap hole over the main for the connection and the remainder of the trench to the curb line on the opposite side of the roadway. Then I divided our services into short services and long services [fol. 819] first, getting the number of the services. The width of the roadway was the factor, the average width of the roadway. I assumed all the mains are three feet from the curb to the center line of the main and the tap hole for the service, 3 by 3 tap hole over each service, would give me the first step, and then the remainder of the trench is what remains of average width of paved roadway. We had a 3 by 3 tap hole directly over the main, evenly divided three

feet from one side of the main to the other for the purpose of allowing the tapper to get in there and work his tapping machine, because that is the smallest dimension that a man can work in. Then we took the average width of the roadway and added that to the opposite curb. We have here the width of roadway 34.92. That is the average width of paved roadway. I assumed all mains three feet from the curb. That is an assumption, because there are many mains beyond that point. For the short service we have put a 3 by 3 tap hole right here, right over that center line of the main, evenly divided, and then the continuation of that 3 by 3 is the trench to the curb line, on the short service. It would be 3 feet from the center of our trench to the curb. In the long service we pursue the same method by putting the tap hole directly over the main and then continuing the remainder of the width of the roadway to the opposite curb. We only use the width of the street in trying to ascertain or compute how long our long services are going to be. We need the width of the street in order to complete the diagram. We used it for both purposes. 2.07 square yards of pavement were disturbed in the short services, that is, 1.27 with the over-cut, of the various pavements. 2.07 would be the difference in the short service for asphalt. The actual [fol. 820] paving disturbed is 1.27 yards, 1.27 square yards for our short services, but when the City restores it you claim their average restoration is 2.07 yards for asphalt. There are 18,857 short services and 11,812 long services or, in all a total of 30,669 services which we have been able to obtain the information upon, properly verified, where pavement existed when the services were laid, out of the 147,000 odd that we have in our inventory. I have only considered the pavement over 30,000. When we laid the main we would not always disturb some of this pavement. If I were going to actually reconstruct the system I would put my services in at the time of the laying of my mains, but I am not going to actually reconstruct the system, consequently I would not do it. In computing or estimating how much it would cost to reconstruct the mains and services as they exist today, on any plan, practical plan at least, I would not reconstruct our services at the time I was installing our mains, not in my method of offering this exhibit of reproduction cost.

In my estimate I have not disturbed the pavement for the mains and reconstructed it and then disturbed it again

in the installation of our service, not in the way that I have presented this thing. I am simply computing here the present prices of labor and material as against the quantities of labor and material that were used in building the system, using the prices that prevailed at June 1st, 1923, and reproducing, if possible, as clear as I can, what it would cost to accomplish that reconstruction at June 1st, 1923.

Q. If you are going to reconstruct the system as a practical proposition, Mr. White, you would put in the services at the time you laid your mains, would you not.
[fol. 821] A. I have not considered it as a practical proposition. If this thing was truly going to be reconstructed that would be a different proposition entirely. We would not put in the services when we laid the mains at that time anyhow, because the mains would not have gas in them and the plants would not be built, and you never put services on a main without gas in it. You would not think of such a thing as a practical "proposition." This is not impractical. I am attempting to give information here and testimony to the effect that this system would cost so much at June 1st, 1923 applying the same units of labor and the same units of material. It is a so-called reproduction cost, but it is an attempt to get at the price of the distribution system at June 1st, at the prices revealed possibly or partly revealed on the books of the company. That is the whole attempt. That it hasn't any relation or any bearing upon the way the system would actually be constructed as a practical proposition, that I would not say. Truly, if you take it from a practical standpoint, I know and you know we are not going to reconstruct this system. I am presenting the weights, the dollars, on June 1st, with the dollars that are on the books or partly revealed on the books, in the march down through the years of time right up to June 1st, 1923. That is my whole effort. *If* I didn't attempt to consider the practical proposition of reconstructing this main system to any great extent in getting this up. I was going to reconstruct the system, I would not provide for the installation of our services at the same time I installed our mains. I would not wait until the thing was all paved over beautifully, nor would I wait

until it was all backfilled, but it would be partially backfilled. But I would wait until the time when gas was in the [fol. 822] main, and that in turn would be dependent upon the ability of the public utility to manufacture the gas to put in the main. I haven't figured on starting to construct our gas manufacturing plant at the same time. I had no conversation with Col. Miller in regard to a plant or any part of it. I have many conversations with him on different topics.

Col. Miller is getting data on some figures which he is going to submit shortly as a witness in this case, for the purpose of establishing a rate base on the reproduction theory and some other things besides. Col. Miller is going to make some computations that will ultimately result in getting some information on that subject. I do not know whether he has adopted a period of construction for his plant. I said I would not connect the services until there was gas in the mains. I waited for the gas in the main before I put in the services. It is an advantage, to have gas in the mains when I put in the services, for then I am ready to serve my customers, when I get to that point. It wouldn't really be an advantage to put them in at the time we were laying our mains, knowing that the plant was then under construction. In fact, it would be a very dangerous thing to do. To have a service in on an empty main and be compelled to blow or purge that main through the service into the consumers premises. It is better practice to dig it up again and put the service in. Tapping the main with the gas in it does not make any difference. We can tap it just as well. We do not los- any gas. If we use modern appliances for that purpose, we should not lose very much. We lose some of it. I didn't really consider that in my computations. I don't have to consider that condition, it doesn't confront me. I am merely putting in the quantities as I said before, there is no use repeating it. I am seeking to do it according to the facts as I was able to [fol. 823] find them. There may have been some services installed that were installed at the time the main was installed, but that main had gas in it. You could only get records showing the time of the laying of the services as to which pavement is included in my estimate by comparing

the main records with the service records, to get the date of installation or the year of installation. I did not do that. My opinion is that there was gas in all of these mains when the services were put in and that is based on my experience and knowledge in the past. I can speak of 38 years ago. I cannot go back as far as the first company. I know it was the usual practice for the vendor companies to install services when the mains had gas in them, but whether they did it or not, I don't know.

In constructing a system, a gas system, the first thing they do, as I understand it, is to construct the main system and then create the demand for their gas, after having the mains constructed—create a demand for their gas and then, as the applications come in, they go and open up the street and attach the services. That is exactly the way it was introduced during my time with the Equitable Gas Light Company of New York, in Manhattan. We did lay the mains, and, after the mains were laid and gas was in them, we did go along and take applications, and that is the way we stimulated the demand. Some education of the public was necessary, and some convincing was necessary to induce them to take the gas.

When a main is first laid in a new system, this imaginary system, and the works is not constructed, there is no gas to put in the mains, consequently it must be laid without [fol. 824] gas in it. The very first action, in manufacturing gas, is to send gas out through these mains and replace the air that is in them, replace it with gas. In order to do that, we have to do what we call—what is technically known or generally known as purging. That is to say, we get all the air out of the system and replace it with gas. There is a certain point which comes there where it is part air and part gas, and you have to exhaust that air wholly until you get to the part where you have all gas and no air. Otherwise the gas will light with a blue flame at the burner; that is, speaking of using the flat flames that we spoke about. At certain parts it would give off a blue flame, at other parts it would not. We have purge holes, to purge the mains but there would still remain pockets, pocket holes in the service pipe. The pocket holes would not let all the air out. It would be blocked in there, that is, the gas would

not drive the air out. In every one of the service pipes from the main inside the foundation wall there would be an air pocket. It could not get out, because at the end of the service at the foundation wall there would be either a plug or a cap, and the air would be held there until such time as you released it or blew it out into the cellar. We do not build and install the services before our main gets there.

Of course the practice of other companies is varied in instances, probably a foreman may disobey orders or something like that, but the general practice of all companies in this vicinity is the same. Where there is a recent sub-division and houses are in the process of construction, [fol. 825] the service would not be laid even though the house was finished before our main got there—no service would be installed until after our main was put in the street and the surface was tamped and repaved, then you come along and put the services in. In fact, if that was done, it would be directly against my orders, because I am responsible for that, and I regard it as very bad practice. The pavement doesn't enter into it at all. I don't give a hoot about the pavement; I am thinking of installing services before as there is gas in the main. We would handle the work, providing there is a very active construction going on through a new sub-division. We would lay the main, and as we laid the main, we would carry the gas with us. If we put in five or ten lengths of pipe, the gas would be ready, right up to that tenth length. If the job is not completed that day, a temporary wooden plug is put in, which makes it safe for overnight, and then the next day we continue on to the point of destination, the destination where we want to carry the main and carry the gas with us there. In other wards, as we construct, we carry gas with us. There has to always be gas in the main before we put in a service. Not that I remember, did I ever put in a service on a main without any gas being in the main. I never have installed a main system when the plant was in course of construction. In all of my experience the plant has been actually manufacturing gas and there was gas in a part of the distribution system and I have simply made extensions to the then existing system, except in that in-

stance I speak of, the Equitable Gas Light Company of New York, who constructed their mains and obtained ap- [fol. 826] plications for *for* services and consumers along the line. I was identified with the work that was going on at that time. Even then we never laid a main unless we had gas in it, they had started to manufacture and distribute gas in some of the mains before we started these large extensions. In the territory around Springfield, the consumers do not have to first be educated. All the present consumers there will need no education whatsoever. They have made some effort to get gas.

This main that Mr. Cummings is talking about has not been laid up to this time. We have not the money to lay it. The people out there are educated to gas, that is, they are educated enough to demand anything they can get for nothing. They want it for nothing. The proposition is not educate them to use the gas, it is necessary at times to educate them to pay for it.

We do not put in the service until after we have backfilled and paved over our main; we would not only have to disturb the main again, but we would also have to excavate a portion around the main again. We would install the services there if the gas was in the main, not exactly in one operation, because there is a different set of men who install services; they have different tools and implements and paraphernalia that they carry with them; it is entirely of a different character than the men engaged in main work, and as a consequence the men themselves are different, they are tappers and pipe men, and a service would be put in by a separate gang, but it could be put in while the main was laid, providing the main had gas in it. How far behind the [fol. 827] gang laying the mains this separate service installation crew would be depends entirely on the progress of the work and the nature of the services and a whole lot of other factors. All the services might be installed within a very short time after we laid our mains if we had the applications, and then again they might not. There are many factors there dependent on the accomplishment of the work, the nature and accomplishment of the work. In most cases this main would be covered up, in other cases it would not be. 41 feet of wrought iron pipe is 1¼ services. I am giving you material. The price per foot is $.15481, the cost is

$6.3472; there is one street L, the price is .13455, the cost is .1463 there is one street. The price is $.13455, the cost is $.1993. The reason for these different prices is they are per pound, some of them and some per piece.

I have one street L and one T so far, now I am giving you a T. One T, the price is .13455, the cost is .1547; then we have two 1¼ plugs, two plugs, the price is .03263, and the cost is .0653. We have one coupling, the price is .102, the cost is .102; the total is $7.0148; incidentals, $1.0522, the total for the material for 1¼ service is $8.0670. Now I shall give you the labor on 1¼ service; for the cost of labor on 1¼ service, foreman $5.25, tapper, $4.5938; laborers $13.1250; cartage .5096; City Inspection .5129 making a total of $23.9913.

The material on the 3 inch service is 41 feet of 3 inch wrought iron pipe at .5291, total $21.6931; one street L at .13455 total .8948; one street T at .13455, total 1.2850; one T at .13455 total 1.1571; two 3 inch plugs at .16313, total .3263; one coupling at .33, total .33 one cast iron sectional [fol. 828] sleeve at .0625, total $5.4375; lead 16 pounds at .0725 total 1.16; yarn 1.3 pounds at .1175, total .1528. The total of those materials is $32.4366; incidentals, $4.8655; making a total for the material of $37.3021. The labor on the 3 inch service is, foreman, $8.75; tapper, $7.6563; laborers, $21.8750; cartage, $.5096; City Inspection .5129, making a total for the labor of $39.3038. The total for the whole service would be $76.6059, that is, it would cost $76.60 to install a 3 inch service the average width of 41 feet at the prices prevailing at June 1st, 1923 and labor prevailing at June 1st, 1923. In our 3 inch I had yarn and lead, and the pipe was wrought iron. That is a sectional sleeve that goes over the main; two joints have to be caulked. That sectional sleeve is made of cast iron. It is in two sections and it is brought right over the main as a collar. That is about the best way to describe it. There is a lip, a cast lip on each side of both sections, which are brought together and bolts and nuts are put through, and the thing is drawn together and bolted up tightly. Then after that on each side the yarn and the lead is driven in and it makes the same kind of a joint for all the world as a joint that we have on any main of bell and spigot type. We put those in for 3 inch sizes and up, and call them sectional sleeves. I do not put

those in for the smaller sizes. Those three quarter inch services listed here have been in for some time. I think those were put in or installed by the vendor companies. On rare occasions, I put in inch services. We would put in an inch service possibly to supply a lunch wagon or something like that. Generally, in the ordinary one family house the custom is to put in an inch and a half or an inch and a quar-
[fol. 829] ter. We are putting in the inch and a quarter in one family house. It is our custom to use that more extensively than the inch and a half service.

For a two family house our practice in installing services depends on whether the two-family house has an instantaneous water heater. In that case we might put in a two inch. Suppose they did have an instantaneous water heater, the size service put in, both families have would depend upon the size of the instantaneous water heater. They are made in several sizes. We ascertain at the time the inspection is made, after the receipt of the application for a service, just what the layout is in the house. Our inspector gets all of that information, and then from that report we govern ourselves upon the size of the service, which in most cases is an inch and a half, and if they intimate they are going to have approved appliances in the place we make arrangements for those accordingly. Suppose I put in a service for you and you did not have instantaneous water heater, I would put in the inch and a quarter service. There is a necessity for inquiring whether a consumer has an idea of getting an instantaneous water heater or not, if he can get along with the inch and a quarter. He might get the idea that he wanted a great big one; some people do. You, for instance, might go up here to Livingston Street to the Berker people, who are agents for the Pittsburgh Water Heater, and they might convince you that it was necessary to have a great big heater that costs a couple of hundred dollars in your house. You in your innocence would take their advice, if you were innocent at the moment. If you got one larger than you really needed you would have to
[fol. 830] come back to me to get a new service. We have to in every instance make quite an extended investigation of our consumers before we know just what kind of service to install. We treat our consumers with the utmost courtesy and consideration and we try at every step in our dealings

with them to give them that feeling of confidence, that they are going to be looked after in the proper way, and we do not leave any stone unturned to do it. Suppose they were not so fortunate as to have one of these instantaneous heaters wished on them unexpectedly that would not upset our calculations as to the requirements, the size of their service pipe, because it would depend in the last analysis upon the use they would put that heater to. If it was an intermittent use they could get along very nicely with the new inch and a quarter service for a house of two families or a one family house. It is not necessary in a great many cases, to change our service pipes to accommodate the unexpected requirements of the consumers. We, in some instances, have to change them. A man may get a large number of appliances and in that case maybe a change is necessary, but it is not frequent. You do not have to have a larger meter when installing an instantaneous heater, not if in the first case the thing has been properly fitted up and equipped it is not necessary to have a larger meter. If in the first instance it is properly equipped and some of these wants are anticipated in that equipment, then you do not need to have a larger meter. We have not installed larger meters by reason of the fact or because of the fact that people have purchased an instantaneous heater. Our installation of meters is generally governed by the size of the risers that are in the house; by the riser, I mean the first pipe that supplies [fol. 831] the houses and the equipment that is there when the houses are constructed. There are prevailing customs where the meter is installed and specially for such an appliance as an instantaneous hot water heater, leaving the small meter that may have been in the house. This is not a hard and fast rule that I have set down, but we try to accommodate our customers to the utmost and if we find it is necessary to supplement what we have there we do so.

It is not the practice of most gas companies in the vicinity of Manhattan to install anything smaller than an inch and a half service pipe. In the Consolidated they do; their minimum size is inch and a half. The Kings County I do not know much about; I do not know what their custom is in that regard, but the reason for those Manhattan installations is obvious, because the apartments there are larger and higher, more floors in them, and more families

in them, and the character of the building and the occupants and the consumption of the building warrants it. In Brooklyn the character of the buildings thus far is of smaller size and less tenants. It is so tagged on this sheet which you hand me that the Kings County Lighting Company's smallest service is an inch and a half, for a one family house, but that does not prove the facts to my mind. I never knew the requirements of the Kings County Lighting Company, the present requirements or practice in installing service. I have not given it any particular attention. I do not know whether it is their present practice to install as a minimum the inch and a half service for a one family house. We have in our district—that is the district supplied by our company, The Brooklyn Union public lamps [fol. 832] on the public highways. There are between four and five thousand of them all told. Those gas lamps are owned by the City and they have services running to them by pipe from the mains to the lamppost. I have not included in my statement here the services running from the main to the lamppost because they are owned by the City so far as I know. They pay for them, when they are installed and I assume they claim ownership. We have a good many services that have been cut off and have fallen into disuse, for various reasons. They are cut off at the main and the main is plugged. The service pipe is not always left right there in the ground, sometimes it is pulled out. In my computation I did not figure on any covering for our services. We cover them at all exposed parts. We have been doing that for a number of years, but I have not added anything in my reproduction cost for that. The exposed parts are covered with felt and canvas sewed on over the felt. In some cases they are boxed in with wood, other times with corrugated heavy paper, and that in turn is covered with canvas. There are various ways of doing it. I have been doing this since I have been with the company in the installations that have required it, where there are exposed places and areaways. The service in the trench gets a coat of Vulcanite Paint, sometimes two coats, after the service is installed. That is a quick drying tar paint of very thick consistency. The purpose of that is to protect the service and keep it in good shape. In some cases it protects it from rust. Electrolysis is the cause of removing

services in some cases. This coating does not prevent electrolysis in any way. I do not think it does. I have another [fol. 833] means of preventing electrolysis; it is an insulating coupling that I invented myself and submitted to Prof. Gans of the Stevens Institute of Technology, who pronounced upon it before I attempted to use it. It consists of breaking the continuation of a pipe; in other words, keeping the pipe about an inch or half an inch apart from the run of the service. In that way, you break the current and it travels no farther than the first point. And then from that point on back to the main you cover that with concrete or grout or cement, a mixture of sand and cement, and in that way you prevent the electrical leakage from following the service and getting into the house, into the pipes, into the cellar and up to the meter. We have used that quite extensively since we have been over here and it has been quite successful in its results. It is our custom to put the coupling right at the main coming out of the street "T" as it turns towards the curb line. Beyond the coupling we put this cement or grout toward the main, then the electricity has to pass through the cement and gets to our insulating coupling first. That stops it. Theoretically, cement also has a tendency to stop it, the damage occurs where the current jumps off. The main, being a larger piece of metal than the coupling itself, is a better conductor, and in that way it continues from the line of least resistance and is shunted along. It goes down the main; it does not jump off the part that is insulated, nor can it jump off the part that is enclosed in the concrete or cement. We have never had but one occasion of real bad electrolytic condition here in the system, that I have knowledge of. That is the one I think I cited in my testimony of several days ago, at Kent Avenue and Cross Street. There we had to cut out the [fol. 834] main, and put in a new piece, and we covered that with concrete. We did what we could toward insulating the joints before putting in the lead and the yarn, and that occurred about 1911 or 1912. Since that time we have had no trouble there to my knowledge. It would not be necessary to excavate. We just take readings, but I have not taken any readings because there has been no indication of trouble, and the thing continues right along.

We have electrical engineers who test our main system to find out whether electrolysis exists. They use instruments

for the purpose with which I am not familiar. They make reports showing the results of their investigations. The last one was done several years ago. I cannot place just in my mind when. We have had reports from time to time of places that indicated something of that nature, and we have taken the proper action by using these couplings and rectified the condition.

This invention that I got up was the result of some instances of bad conditions, and I talked with some electrical engineer on it, and he also called my attention to some insulating couplings that were on the market, and he said the trick to do was to break the continuity of the pipe. The question then was how could that be devised. It appealed to me that such a thing was possible, and, while the insulating couplings on the market were not in sizes, suitable sizes for us to use, nor were they rugged enough, I felt, to use in the street and leave them for an indefinite time such as we would have to in our service work, I got up this, which was patterned more along the lines of these ones that were not so useful, and in that way, the thing was got together [fol. 835] and used. Then we took readings after we had used the first one, and after I had submitted it to Professor Gans, at Stevens Institute of Technology, and told him my experience in this one particular instance, I confirmed through him that it was the proper thing to do, and since that time we have been using them. At the time I submitted this, Prof. Gans was supposed to be an authority on electrical questions. That was about 1911, I think. The patent does not belong to me personally. It is not patentable. I really don't know whether the other gas companies use the same device that we are now using. I don't know whether it is a device that is peculiar to our own company or not. Infrequently we have engineers report as to the existence of electrolysis in our system. The last report that I know about was some years ago, but how many I could not tell you. The presence of electrolysis manifests itself by taking readings of voltage and amperage from the service to the main or from the gas main to the water main or the trolley tracks to the service pipe gas service pipe. The electrical engineers would do that. We have a number of electrical engineers connected with our Flatbush company. They are the ones that I would use for the purpose of that. They

have the equipment but they have not been making any readings within the last year. Prior to that I couldn't tell you. I am a little hazy on it. I know that we have had occasion to ask them to make readings in different places, both here in Brooklyn and the subsidiaries.

[fol. 836] Down at New York Avenue and Platt Street, that is locally designated as Cedar Manor, Jamaica, we had a main down there that was recently laid, and the fitter went in there to set the meter after the service was installed, and about the time he was going to connect the meter to the riser of the house, he was putting his wrench on the coupling to bring it down to complete the connection, and just as he was going to make the connection, he got a great big spark or shock. He immediately reported that experience and we got on the job and we put one of our insulating couplings on that service pipe at the main. First we took readings, we had these engineer- up there and we took readings. Then after that we put—we took readings and we got a reading of quite a considerable leakage. Just what it was now, I don't remember and then we disconnected the service and we put on one of these insulated couplings in the regular way we put them on, and connected the service up again. Then we took another reading. The second reading gave us zero, which showed it was nothing. Well, that is one instance I can tell you. That was 1911, 1912 or 1913, something along like that. Suppose it prevailed in our main system here, right today, and did not happen to go into the services, but continued along the main, we would know of its existence if we had not made any readings. The point where the current jumped off would make a hole in the main. The minute the current jumps off the gas would come out. When the gas comes out, there is a report of leakage right away. We have an emergency system that is right on the job in fifteen minutes, and makes a report. Any citizen can call us up on the telephone and the emerg- [fol. 837] ency crew will be right on the job. A small leakage is indicated by a man's nostrils, if he is in fair health and hasn't got a cold. I could not tell how long it takes the electrolytic action to affect the pipe; that is to make a hole in it. I did see some water pipes that were affected by it. I can recall one down in the Flatbush territory. There we had a 6 inch water main which was directly under a gas

main and there was a hole in the main in the water main, and it also put a hole in the gas main. One hole was right over the other one. The consequence was that the water pressure filled the gas main and the first intimation we had was that it flooded our section, and we finally located the point where that occurred, and of course we fixed up the gas main and all we had to do was to just cut out a tap hole and put in a plug, and the water people I suppose did the same thing with their main, but that was an instance where a water main was affected. Our water mains are lower a foot or two than the gas mains are, as a general proposition. Whether it would follow one more than it would follow the other, I could not say. I am not up enough on the subject. It would follow the thing that it is clo-er in contact with, if that condition occurred in a house or in a building, it would not make any difference what depth the mains were laid. The contact is the thing, that governs that—the location, wherever it comes in contact with it, that is it goes around in a circuit, and back to the power house, or the place from which it escapes. The general understanding among people who are not well versed in the subject, is that a return is made in some way, by bonding the rails of the trolley lines to make a continuous path for it to travel on, and, in that [fol. 838] way it eventually gets back to the power house. I would not care to express an opinion on it, because I am not very well versed as an electrical engineer. In fact, I know next to nothing about electricity. I don't know whether it travels that way or not, and I don't know whether that prevails to a greater extent now than it did years ago, or whether the reverse is true. I know that it cannot prevail in the system of the Brooklyn Union Gas Company, because it would manifest itself by leakage. I have all to do with the leakage of gas in the distribution system. There are reports made, showing where leaks occur in the system. I have nothing to do with unaccounted for gas at all. The unaccounted-for is arrived at by making a computation in the Assistant Chief Engineer's Office and the Auditor's Office as to the total unaccounted-for for the system. Now, the maintenance of the system and the repair of leakage of the system, I am responsible for that. The two do not go together, in the way you are trying to make them out. I keep advised of unaccounted-for gas only as to my part that I am responsible for, that is the extent of the leakage, that

is all I have to do. I do not know the extent of the leakage for each year offhand. There are records based on computations from which you get the entire unaccounted for. It takes the whole system into consideration. The auditor's office keep those records and they are also in charge of the chief engineer. I have nothing to do with them. The information does not pass through me or pass through my department. The only portion of that subject of unaccounted-for gas that I am familiar with or have anything to do with arises by reason of leakage in the mains; it is my job to keep the mains as tight as a drum and repair all [fol. 839] leaks. If I don't do it, I get into trouble.

I see reports of the total unaccounted-for quantity of gas from time to time and I look at it in a casual way. If it should increase say from 10 per cent to 15 per cent, I would see it any way, without my attention being called to it. I would naturally have a conference on all mat-ers that occur. My attention would be called to it as part of the routine of our establishment. It is my constant effort to keep the distribution system as tight as a drum.

[fol. 840] Brooklyn, New York, February 20, 1924.

JOHN T. WHITE

Cross:

The record showing these contributions by consumers is in the auditor's office. I have an idea it is kept in the dollars received, and that is as far as I can go. I think it would be advisable to inquire of Paine, the auditor, regarding that. It is in the books in the auditor's office. Whether it is in the ledgers or the journals I do not know. I looked at the P. S. C. reports to ascertain the amount of money that had been contributed by the consumers for the installation of mains, for 1920, 1921 and 1922, page 2468 as stated in the testimony here, and they involved matters of accounting which the auditor can explain when he comes on the stand. In other words, the figure, as I understand it, is involved, and he is better able to explain it. It is a rare instance of the consumers contributing anything for mains, and if it occurred, we would have to dig it out in some way or other

from the records as revealed by the auditor, and I would not care to say whether they did or not; but if they did, it is very rare. * * *

[fol. 841] We get the purchasing quotations per foot on $1\frac{1}{4}$" wrought iron pipe. I got the price that I have in our [fol. 842] list June 1st, by getting telephone quotations from the Reading Iron Pipe Company and the A. M. Byers Company. In addition to that, I consulted the Iron Age of June 7th and the Engineering News of June 7th. The Iron Age at that time quoted a higher price than I took. It was excessive at this time and in other instances it was too low. I don't recollect what price the A. M. Byers Company and the Reading Iron Company quoted me. I took that on a telephone pad, just the same as I did on the cast iron pipe. That is my habit in taking such quotations. I got the quotations for the wrought iron pipe along about the middle of June or the latter part of June, something like that. I called different people, but I don't recall now what price they gave me. The price they gave me is almost the same price I adopted. Our price, to an extent, is the result of my judgment after making these various inquiries, knowing that the journals give but the trend of the market and they are not absolutely accurate as to the market conditions; that in order to establish a market price, to have got to obtain other information. I did not this time look into The Gas Age to see what price they were quoting on wrought iron pipe. I just relied upon the quotations that I got from Byer and the Reading Iron Company by telephone and then the quotation in The Iron Age; and then subsequently I had some actual purchases of pipe that we had made from the Byers Company. In July, July 11, 1923 I made the purchases from the Byers Company. I purchased of them [fol. 843] 350,000 feet of $1\frac{1}{4}$ inch, at the same price that I used in my reproduction. That was in July. Wrought iron pipe was the same price on June 1st that it was on July 11. Through this purchase that we made on July 11 from the information I had assembled and had before me, and in my memory, and I knew what that was, and comparing the two, they were identical. I was convinced that there was no increase of cost of wrought iron pipe from June 1st up to July 11th, at the time I ordered this; I think cast iron pipe increased

in price during that period. From the investigations I pursued wrought iron remained stationary. When I found that the quotation in the Iron Age was not in accordance with the market on wrought iron, I did not call it to their attention. Col. Miller and I discussed that proposition when we were talking about the discrepancy in the quotation of price on cast iron. We didn't discuss the fact that they had a high quotation on wrought iron. I knew at that time that they did have one at the time that I talked to Col. Miller on the wrought iron pipe. Regarding the cast iron pipe, I do not know whether I did or not. I do not remember. I did not call their attention to their error in that quotation of wrought iron pipe. I do not know whether or not that error still remains today. I called the attention of The Iron Age Company to a discrepancy in one case in their quotation and did not do it in the other because I did [fol. 844] not think it was incumbent upon me to attempt to correct all the magazines published on the subject. I had no idea on the subject of wrought iron. I just put it aside—cast it aside. I have in the past bought wrought iron pipe myself for services and have kept informed of the prices in the past, so that when I approached this subject, I would know what the company had been paying for wrought iron pipe in the past. I used that knowledge in arriving at this conclusion. This high quotation in wrought iron pipe was in the same periodical, the issue of June 7th, that I discovered the error in the quotation in the cast iron pipe. When I sent the young man over to inform the editor of The Iron Age, I did not tell him or instruct him to tell the editor of the paper that he was low on his cast iron pipe quotation and high on his wrought iron pipe quotation. I did not tell my messenger to call that to the attention of the editor of The Iron Age. I don't recollect at the moment how much higher the quotation in The Iron Age for wrought iron was than the price I adopted. I do not remember what that quotation was. In my material for the $1^1/_4$ inch service, I have two plugs. One is on the tee at the main, and the others is on the end of the service. That is, on the end of the service within the foundation wall. I remove that plug and attach the meter. I have it plugged now, so that the consumer cannot get any gas. That will probably be taken out and the service extended when we make what we call a

[fol. 845] service extension from the foundation wall to inside the cellar somewhere. I carried it in the foundation and plugged it in my estimate. I have the price of that last plug in my papers. It is 6 cents and a half—.0653. There are two of them here, .0325, three and a quarter cents. The coupling is regular wrought iron pipe coupling, joining two lengths of pipe. This is not the coupling that I spoke about that I invented to prevent electrolysis. This is just an ordinary common pipe coupling. The incidentals cover the manufacture and use of insulated couplings for the prevention of electrolysis, pipe joint compound, vulcanite, noncorrosive coating, cement, defective fittings, red lead, boiled oil, lubricating oil, kerosene oil, red lanterns, electric safety lamps, cotton waste, ice, petty cash, car fares and telephones. I got that figure from experience. I adopted 15 per cent of our materials. That is, 15 per cent of the cost of the materials I took to cover these incidentals. That was my practice in making up the estimate—such incidentals as I have stated here. I have an item for cement and couplings in my incidentals. That cement was to be used for around the main and this coupling that I spoke about making the coupling. That was the coupling that I called to your attention the other day that I invented for the prevention of [fol. 846] electrolysis, but the cement was not to be used for that. The cement was used for restoring the sidewalk, putting back the flagstones and putting up the foundation wall and such other incidental work that called for cement in the introduction of service in the house, and that is, of course, an average figure to cover all. In my estimate I did not make an allowance for cement around the main, that is, between this coupling and the main. That is considered in the 15 per cent but not in the item of cement. That is calculated in the cost of the coupling. I cannot tell how much of my item in incidentals is included for our cement and for this coupling. I have not that separated that way. It is just an opinion figure of 15 per cent covering all those elements of cost. It is only a part. There will be some part of the expense attributable for that purpose over the entire system, but not specifically on every installation. I have included the item of incidentals at 15 per cent, and the item of 15 per cent takes into consideration the installation of

this coupling and also cement—but not in every service, though. Only where it was necessary. I have not made any definite provision where such a coupling would be attached to it, except that I know it will occur in some places. I can't give any idea how much as I did not go that far into detail, except to say that that is a small part of the 15 per cent. I know from my own experience about what percent-
[fol. 847] age of those couplings it will be necessary to install in our system, providing I reconstructed this system; I have that knowledge, and that is the reason I made some allowance for it. I could not say offhand about how much, or how many services would have to have one of these couplings attached to it. I can not give any information on that. I could not tell offhand what is the percentage of couplings I have attached to our services now. The current in the main of the coupling prevents the electrolysis from getting into the service and simply allowed it to continue along the main; that is the current does. I do not know where it continues, but I know it does not get into the service beyond the coupling, and it is because it is in the main that I try to keep it out of the service.

I arrived at the price for our foreman and our tapper and our laborers, i. e., the foreman is $1 per hour, the tapper is $.8750 per hour, and the laborers, of which there are four, are $.6250 per hour. I have the foreman in there at $8 per day and the tapper at (eight times $.8750) $7 per day. The foreman works with the rest of the gang—or the tapper works with the rest of the gang. You must understand that in installing a service we have to break through a foundation wall. The tapper taps the foundation wall and the main. They are all-around men, generally. He participates in the work, whatever turns up, in that cost of in-
[fol. 848] stallation. I have four laborers that I have allowed for that, at $.6250 or $5 a day. That is not the price I got from Mr. Duncan. I got a higher price than that from Mr. Duncan, I think, for laborers. I think so, but I am not sure. Duncan's laborers were at 62 2/3. A nine-hour day, that is. It does not make any difference, it is 66⅔ an hour. That is what Mr. Duncan told me he was paying as of June 1st. I have not talked with Mr. Duncan since you have questioned me about that. I have not met the gentleman. I have not made any investigation to find out whether

Mr. Duncan was paying them 50 cents an hour on June 1st and that he did not increase the pay of his men until June 7th. I have not read the testimony of Mr. Duncan in the Kings County case. I have other things to do besides reading the testimony. I have enough to do reading my own just now. Our wages for the tapper are the same wages that I pay for our yarners or caulkers on the main, or for installing the mains. It ordinarily takes to install a service, an inch and a quarter service, where I have the average length of 41 feet; if I bring the gang on at 8 o'clock in the morning, about five hours and a quarter. I did not make any exact assumption as to how many men it would be necessary for me to employ to put in our services of the system. You can figure out the time of the total number of services and get the number of men that would be necessary to put in [fol. 849] both. That is only matching up the actual cost of doing the work with the units of labor involved. I do not see how the actual cost shown by the books of our company for the installation of services around June 1st could possibly agree with our figures because I have taken a higher figure than we have been paying our people. I have taken the market prices of labor that prevailed around June 1st, and I have taken the market price of material at June 1st for service installations; whereas the book costs are averages carried forward, of material purchased for the years back of 1895, and the labor that they use, is the labor steadily employed of course, which we pay a less sum than the market price of labor in the territory and vicinity. The actual cost of installation of mains and services has inserted in there as a cost for these mains and services an average price extending over the period of years; that is as to material used, and the labor performed. The labor performed is that actually paid, but the material is an average price which is brought down from 1895, as far as I know. Our average cost would to some degree reflect the cost of cast iron pipe in 1895; if, as I say, it is a progressive average, I do not see why it should not. Cast iron pipe in 1920 got up to around $72 a ton. The present price that I carry as a unit or as an average cost would reflect that [fol. 850] price for the sizes that we purchase. We do not purchase all sizes at a time. We only purchase that which we require. The amount of pipe on hand by our company

gets low towards the spring, from the use of the preceding season, as compared with the starting of the year or the starting of the season. Then again there are deliveries made throughout the season and there is quite a fluctuation there in the stock. We are dependent, of course, upon the shipper's ability and that of the foundry to produce, and many other facts enter into the consideration. We never let our reserve stock of pipe reach a very low point. That would not be advisable in an active system such as we have here. We had quite a quantity of six inch pipe on hand prior to 1916. Each year we bought some, wherever it was possible to do it. If the market was favorable for the purchase, we added to our stock, when we were able to do it, at intervals. There was a period in 1919 when we did not buy any pipe—none was delivered. In 1918, there was some pipe delivered which possibly was purchased in 1916 or 1917. There was some difficulty around those years getting deliveries: there was a congestion of freight and Government restriction. Just what it was I do not now remember exactly, but anyhow there were difficulties. During those years when we were not getting any pipe our reserve of pipe ran low, but not what you would call pretty low. We always had some pipe on hand. In those years building [fol. 851] activities ceased; there was a great demand for housing facilities as a consequence, and when building activity lessens then naturally our activity in main extensions lessens. On specific jobs I make myself familiar from time to time with the average cost of six-inch pipe. The average price which we carry in our book now must reflect the cost of pipe over a great many years, because it is a progressive average. I believe from the information given me it is far below the present market price of pipe. I do not know how much we are carrying it at, in cost per foot, for six-inch cast iron pipe. I have not compared it. The figure for the 12-inch pipe is $30 a ton, because we bought none for quite a number of years back, up to sometime in 1923. The price that we are carrying our 12-inch pipe at was the market price of a certain year way back in 1916 or 1917 when we bought that. We purchased some 12-inch pipe in July, 1923, and paid $68.60 a ton for it. It was purchased just for stock. We had to buy that pipe because our reserve of 12-inch was getting low. I cannot tell about the reserves on

6-inch, a year or two ago. From year to year they lessen as they are used, but as to what degree of lowness there is, it is kind of hard for me to say offhand. The average price that is now contained in the books and applied to our figure of actual cost of installation of mains isn't the price per ton of about a year ago on the 12-inch—it cannot be, nor on the [fol. 852] 6-inch. I would not even say it was there. That all depends on the yard it is taken from and the time the purchase was made of the stock in that yard. I do not know the cost of installing a certain main—whether it varies in accordance with the yard from where they get the pipe, the 6-inch pipe. The auditor runs an average there. I know the method generally how he arrives at it—but I do not know what the average is. I do not know whether it is fifty or sixty dollars a ton, that we are carrying now, except that I pursued the 12-inch and I know what that average was, because I had to do it. I know there was some six-inch pipe received in 1918, but that was on an order that was made two years prior. I cannot give you the years we bought 6-inch cast iron pipe. I merely have the fact that some was delivered in those years on a previous order than the year it was delivered. I really could not tell whether he carried a weighted average or a straight average. The affidavit made by our Purchasing Agent, George W. Gatehouse, handed to me regarding the purchases of cast iron 6-inch pipe, refreshes my recollection as to whether our company made any purchases during the years 1918, 1919 and 1920. There were no purchases made in those three years, 1918, 1919 or 1920. For installing inch and a quarter pipe, the material would be the same, obviously, but the labor would largely depend on the efficiency of the gang and how they [fol. 853] were supervised. It is true that if we were going to lay the services into all these buildings across the street, that our labor charges for services would be less, if they did the work that day, than it would if they laid on service on this street and another service on another street and then a third service over on some other street. The item of cartage is an average figure covering the cartage for the entire territory, and is based upon my experience in carting pipe in this system for the last thirteen years. When I speak of the system, I am speaking of the subsidiaries as well. My figure there for cartage did not necessarily take

into consideration the cartage of the pipe to the consumers of the subsidiaries. That was only a base figure to arrive at a conclusion, and was obtained by experience. I eliminated that part of the figure which referred to the carting of services to the subsidiaries, using the knowledge that I obtained by experience, not only there but in Brooklyn. The average of carting services in the territory served by the Brooklyn Union Gas Company alone showing the cost, the average cost of carting services would be just the same as the average of carting any other weighty object, and the figures which I used for a basis to testify to were identical with the services. It costs as much to cart a ton of service pipe as a ton of feathers. In arriving at this figure of [fol. 854] cartage for the mains, I took into consideration the general experience I have had in carting both in the subsidiaries and in Brooklyn, and this is just a figure arrived at by the use of my judgment based upon my experience. There is no difference in the unit cost of carting for the subsidiary companies and the unit cost of carting for the Brooklyn Union Gas Company. I did not add anything to this figure by reason of any subsidiary circumstances with which I was familiar.

The subsidiaries get their supplies from the storehouses in their own territories for pipe. The cast iron pipe for the mains and the pipe that is shipped here—is shipped right out in their territory. That is not handled through the storage yards of the Brooklyn Union Gas Company, except where that territory of the subsidiaries is closely adjacent to the territory of the Brooklyn Union, then as an economical proposition, advantage is taken of that fact. The meters go all down to the Meter Repair Department, first off, and then after being tested by the Public Service Commission and stamped, then they go forth to the subsidiaries. In the practice of the company there is an item of cartage of meters from the meter house, the meter shop out to the territory of the subsidiaries. The installation of the meters and the work that is done at the meter shop come under my supervision. That is part of the Distribution Department. I have charge of or have supervision of those things. I have nothing to do with the appliances and don't [fol. 855] know about that. The meters are sent to the territory of the subsidiaries by motor truck. The Brooklyn

Union trucks go out to the subsidiaries several times a week and deliver the meters.

With reference to the services, I don't think our company has any half-inch services. I haven't included any in my inventory. I haven't any services 2½ inches in size. The report that our company made to the State Tax Department does not refresh my recollection as to whether our company has services of the size of ½ inch and 2½ inches. We are not installing any three-light meters now, except those that are brought in for repair and sent out again. It was quite a considerable time ago when we installed a new three-light meter. I would not say that they are practically obsolete. They are useful for certain purposes, where there is a small amount of consumption, but not very small. They are installed in halls of houses, apartment houses, where they burn a hall light all night; in lunch wagons where they have a hot plate for cooking food, where the consumption is very small, and in places of that type and general character. If a three-light meter was brought in and sent out again, it would be a new installation in so far as the consumer is concerned. I have not purchased any lately. I could not tell from memory how long ago our last purchase was made. The five-light special [fol. 856] that I have listed here is a three-light meter converted to a five-light size, and I have listed that there at the three-light price, if I remember rightly. I have no information as to the number of meters owned by the company, except the general information that I get in the routine of business and the conduct of the meters going out and coming in. I got that figure from the auditor. The meter companies would make three-light meters now on request, but I don't think they have any great demand for them. I have not purchased any three-light prepayment meter nor any prepayment meters at all lately. I have not purchased any prepayment meters in late years either of the size of three-lights, five-lights or ten-lights. As a general proposition we convert that into a regular meter. The idea is to have as little a quantity of prepayment meters out as possible. We are trying to eliminate our prepayment meters. There may be a demand for them; somebody may ask for a prepayment meter and, in that case, we always endeavor to oblige. The 1,700 light meters are in use in certain large

consumers. Just where, I haven't got in my mind now, but I think we have one of them at the Doehler Die Casting Company, and we had one somewhere else, in the plant of some other large consumer of gas. I may be wrong on that, but they are generally put out for a very large consumption of gas. They do not have to be ordered specially; they are a stock size. I think the meters above the size of 200 lights [fol. 857] appear upon lists of the American Meter Company or other companies, and that they carry those meters at a list price. I work for the subsidiaries as well as the Brooklyn Union Gas Company.

[fol. 858] Brooklyn, New York, February 25, 1924.

JOHN WHITE

Cross:

There is a correction which I wish to make. At the bottom of page 2597, appears:

"Q. Well, does the amount or volume of the work done in repairing your distribution system—does that come to your attention?

A. The complete costs?

Q. Yes.

A. No, that is an Accounting Department function."

That may create the idea that I don't know the complete costs of the distribution system. That is not so, that is not the fact. I do know them, and I do watch over them and I am entirely familiar with them. * * *

[fol. 859] There is a record of the number of services installed in these several years and that record is available to me but I have not got the figures with me. I cannot give you the average cost of installing all the services as shown on our exhibit. I have not calculated the average cost. It can be calculated. The average cost of installing services, as shown in the total on Exhibit No. 165, is $42.36. If you [fol. 860] obtain the actual cost for installing services during 1923 and divide by the number of services installed during that year, you would not get that figure. Because I have taken the market value of labor on June 1st, 1923, which

is a higher rate than we paid. I have taken the material at June 1st, 1923, and the valves and roadway boxes and put on the services that actually exist in the system. In addition to that, I have put on organization cost, which you would not get out of the books which you have sent for or are kept in the Street Department. In addition to that, I have the entire pavement that was disturbed for construction during the life of the Brooklyn Union Gas Company, and prior to that, wherever I could get it. All of those elements go in there and increase, of course, this average cost of service that I have mentioned as being $42.36.

As to the cost of pipe going into the service, my books would show the actual cost of the pipe that is used for the services, throughout the year 1923. The pipe purchased at June 1st, if any was purchased at June 1st, would be the same price, but pipe which is used from the storage racks in the different places where it is obtained from, if that was purchased at different periods, why, it would not be the same.

The average shown on our books—or, at least, the price shown on our books, if I am correct in my first statement with regard to the prices they carried—I possibly ought to correct that, because I think the prices that we carry from month to month are the average prices issued by the auditor for those computations. The thought just occurred to [fol. 861] me that when I said that they were the actual prices, I am wrong. I think our people of our Distribution Departments, and I am quite sure that they do—I will say that they do—they get from the auditor each month these average prices for all material and use them in the computations in the service books. The general way of our Distribution Departments is: the materials which go into the cost of installing the service are carried at an average price, the same as materials which go into the installation of a main. We handle all the things the same way. They [fol. 862] are all in harmony. * * *

My duties for the subsidiaries are identical with the duties performed for the Brooklyn Union Company. That is to say, I have the same title, I assume the same authority and I supervise every activity in regard to the Distribution System that I have testified I assumed in regard to the Brooklyn Union Distribution System. I have installed

more mains for the subsidiaries than I have for the Brooklyn Union, because Mr. Cummings, counsel for defendant attorney general, developed the fact here that the other day that there was roughly 250 miles laid during my years of employment with the Brooklyn Union Company, and about a like amount in the subsidiary companies. I think the figure all together is 560 or 550 miles that you drew from me on cross-examination some days ago. My figure 565 miles as to the result is correct. There is some slight difference [fol. 863] between the Brooklyn Union and the Subsidiaries. The difference is one third. I may have devoted more time for the installation of the mains of the subsidiary companies than for the Brooklyn Union. The repairs to the mains can best be obtained by comparing the volume of repairs between the two systems. I should say that it is about the same. By reason of more installation in the subsidiary territories, the necessity for making more repairs to the existing Distribution System of the subsidiaries is probably one factor, but there are others. In the subsidiary companies, particularly in Ward 4 and in Ward —, those being the two wards of the subsidiary companies, on which they are located, up to a few years ago they had no sewerage system of any moment, of any great length, and they began installing sewerage systems, and by reason of that fact the repairs in the subsidiary companies have been greatly increased.

Roughly speaking, I devote about half and half time to the repairs in the districts of the subsidiaries and the territory of the Brooklyn Union itself. It would be kind of hard to take the two because the volume of work varies one with the other. But please bear in mind that is very rough. I have never figured it out, but wherever it is necessary for me to go, I go. As to how my whole time is devoted, outside of the rate cases, as between the subsidiaries and the Brooklyn Union, in a rough sort of way I should say sixty [fol. 864] forty; that is 60 per cent in the Brooklyn Union and 40 per cent in the subs; but that is very rough. I have sometime spent but not considerable time here in the preparation of this rate case. I have been making up reproduction cost on and off for years and I pick them up from time to time and add to them and compute whenever I have a little time to spare from day to day, and I would not say

that I have spent considerable time in the preparation. It is routine work with me and I cannot give it that degree "considerable," because I do not think it exactly explains it. I just devoted my odd moments, minutes and hours to the preparation of this case.

I have under my supervision a gang which I call a floating gang. The street department organization consist of from six to eight hundred men. When I have a repair or an installation to make for the subsidiaries, we send a gang out there in their territory, or else there is a gang kept out there if the volume of the repairs justifies the employment of the gang, or a number of gangs. It is regulated by the volume of work, naturally. If we have enough to keep men out there a month, they stay out there a month. Immediately the work is finished, they are brought back into the city again and pick up what has accumulated there.

These subsidiaries are charged for the work of installing [fol. 865] the mains or repairing the mains that come under my supervision. The Brooklyn Union owns the material until it is used on the subsidiary or districts; when we put men in the field of the subsidiary districts, we carry a separate subsidiary payroll of that particular company. On that payroll is the distribution of the charges on the various classes of employment that these men perform. The material used on the subsidiaries companies' territory is reported separately to the auditor on proper sheets for that purpose, and he computes, the same as he does in the Brooklyn Union, the cost of that material. He brings the payroll in this material computation together. The result is bare-bone cost.

We have timekeepers who make the rounds two and three times a day. In addition to that, that is checked by the general foreman, and sometimes we have a man who goes around independent of these people, and it is checked. Generally we try to fix it so that we can keep the men ther- more than one day, so as to save the expenses of travel. Take a case like a leak, for instance, if all our men, or the best part of our men, had been removed from that territory and a leak occurred there, our first action would be to send the emergency gang there to effect temporary repairs, immediately upon recei-t of the knowledge that the leak existed. After that, we don't allow a leak to go over night [fol. 866] without permanent repair.

This so-called emergency gang consists of a chauffe-r, an emergency wagon, motor wagon, motor truck, with all implements on it to perform inside or outside repairs, and, in the daytime about three men, in the nighttime about five men, who can handle anything that comes up for a consumer to give immediately relief. In addition to that, they have a pulmotor in the emergency kit. They are skilled in the operation of the pulmotor. That we employ subject to the call of the Police Department or the hospitals, or anybody who requires it, who needs its use, and of course, in the operation of it we insist on having a physician present, or, in some cases our men are more expert in the operation of the pulmotor than the physicians are until they get used to the mechanism of it. Two of the emergency gang operate in the territories of the subsidiaries as well as the Brooklyn Union; one of them does not. We have three emergency gangs and three stations; and I don't know how they are charged to the subsidiaries. That is an accounting department function. These repair gangs who go out for a day in the territory of the subsidiary companies and then return are charged by the number of hours they take in going to a job and the number of hours consumed returning to the Brooklyn Union Territory. And the number, naturally, and the number of men on the gang is obtained by the foreman making out a report on the back of his material ticket. [fol. 867] That in turn is checked by the time keeper and supervised again by the assistant general foreman and the general foreman, and it finally reaches the superintendent of the Street Department. The charge to the subsidiaries begins at the point where they leave the territory of the Brooklyn Union and go into the territories of the subsidiaries on those repair jobs; yet ought not to. Of course, in that line of division which exist, it is purely an imaginary line—we have to use commercial sense. We cannot get everything right down to a hair line. If there is a half an hours travel from the Brooklyn Union territory into the subsidiary territories, the foreman generally charges it to the subsidiaries. On the other hand, his return, that part of his return consumed by his going to the Brooklyn Union territory, that is also handled in a common sense manner, realizing that the hair line there of the computation can not always be determined, but a fair, honest distribution

of the time is made. Suppose the gang does go out to work in the territory of the subsidiaries for a day and returns, the effort there would be to get in the time that they spent in the territory of the subsidiary companies.

These tickets are not stamped with a time stamp. The man who determines the hours spent in the territories of the subsidiaries works under my jurisdiction; and the methods that he employs are methods that I have directed him to employ. I gave them general instructions as to how the [fol. 868] cost of labor shall be allotted between the subsidiaries and the Brooklyn Union Company where this gang goes out for a days job and returns to the territory of the Brooklyn Union Company or their headquarters at night. I give them general instructions. I have the timekeepers and the foreman before me many times and I tell them to use common sense in the matter. I have always been a teacher and anybody who has had long experience in a particular job is a teacher, really, and many times I try to get common sense to everybody; sometimes I don't succeed.

We will assume a gang working in the East New York section on Jamaica three blocks from the city line. By "three blocks from the City line," I mean the border line between Queens on this side (indicating) and Brooklyn on this side (indicating). These men get information that their presence is necessary somewheres in the subsidiary companies—in the fourth ward, we will say for instance—without dropping the work at this point in the Brooklyn Borough, and they go by motor truck to somewhere in the subsidiaries. Their time from the time they start in the Brooklyn Borough to the time they reach there and the time they reach back to their job after they have consummated whatever they set out to do, is properly in my opinion, and in the common sesnse way, applicable to a charge to the subsidiary companies. Assume that the gang is working [fol. 869] on Remsen Street, across the street, and a call comes for them to go out to the territory of the Newton Company. As the counsel suggested, it would be, I would say, a wild assumption, because we would always have gangs working nearer to the Newton line than men working down here on Remsen Street. That assumption is contrary to any condition that would occur within the last thirteen years. We always have some gangs working near

them down here in the Borough Hall Section. It might be a mile away, but it would be nearer, because the volume of work that we have to handle is spread out over the entire territory; so that in considering when this job is received, we know where every gang is right here at the Central office; we can put our finger right on every gang and we know just where to pick them up, and our natural inclination there, for economy's sake, is to take the gang nearest to the job. If we had our gangs at work throughout the Remsen Street district in Brooklyn, one gang would not be working right near the territory served by the subsidiaries at all times, there might be a time when the whole three gangs were working along in more settled sections of our distribution system. It was not necessary to send our nearest gang over a mile or two to the territory of the subsidiaries. For the reason that we always have gangs in the subsidiary territories which for most times are close to those locations, [fol. 870] nearer in many cases than the men working down here in Brooklyn, and we utilize those gangs as well as we do the Brooklyn gangs. That is, we most always have men at work in the territories of the subsidiaries wherein any of these hurried jobs occur. For a one day job, of course, it is a rare occurrence where a gang is taken out of the Brooklyn territory and sent into a subsidiary territory. All these things are rare.

This floating organization that I spoke of does not float over into the territory of the subsidiaries for a one days stay, but they float there sometimes for a month or two months and sometimes for a season, wherever they are needed.

I never installed an entire distribution system; I have made additions to distribution systems, but I have never installed an entire system. But I have installed what you might call in some country towns two or three entire systems, wherever there is work of that kind done. Taking a distribution system as an entirety and the variation between them, I do not know whether they lay the 6-inch size and the 4-inch size cast iron pipe, or whether those two sizes predominate or not. * * *

[fol. 871] I mean that the mile of main would be laid in a paved street in so far as it is revealed by my estimate of cost of replacing these pipes in the Brooklyn Union sys-

tem. Mr. Cummings nailed me down to the inventory as of June 1st, 1923, which is the Brooklyn Union system inventory, and in my scratch figures that I made—I included that amount of pavement that I had included. It cost about [fol. 872] a dollar a foot to install six inch mains in an unpaved street prior to 1914 and 90 to 95 cents to install four inch mains in an unpaved street. It would cost to install those mains in paved streets from 50 to 95 cents more a foot. I have no recollection of its being generally conceded that distribution systems could be installed prior to 1914 at about $4,500 a mile. That is not in accordance with my opinion. I got up this analysis of cost of main but those are not my initials on it. My initials are "J. T. W." I got that up.

(Marked Defendants' Exhibit No. 25 for identification.)

This is an analysis of the cost of main-laying gotten up by me, the details of it; and the date of it is October 3rd, 1914. My recollection is purported to show a specific instance of mains installation of a certain subsidiary company, from recollection. It is not revealed by the exhibit how many feet of mains it covered. I have set out there the cost of pipe per foot, the sizes running from 2 to 24. I got that information from a certain job that we were estimating on at that time, if I am correct in my memory. And that showed our estimate on that particular job.

It is evidently a Public Service Commission exhibit in [fol. 873] some other case that I have testified in, but as to the case itself, I cannot recollect, I made so many of these things. I think it is some case before the P. S. C. I do not recollect the nature of the case at this moment. I have been in many cases before the P. S. C. It showed me the cost of main-laying. That is an exhibit which was offered in evidence, as I understand, through me in what was known as case No. 1610 before the commission in which was a proceeding with regards to the rates of the Newton Gas Company, which serves the second ward in the Borough of Queens, and that proceeding was going on, I think, in 1915 and 1916.

That is only the estimate—that shows the bare bone cost of the construction of the laying of the pipes. The pipe and its installation, that is what I meant by the word "construc-

tion." I have in it all the items such as specials and bed blocks and incidentals and all of the items necessary for the installation of the mains except the organization cost, the insurance, both public liability and compensation, and such pavement as there may be. That wasn't in my incidentals; I left those out of this exhibit; it is customary to do that in such cases. That is incomplete. I do not ever recollect of getting up a complete exhibit of the cost of installing mains in any case for 1914 prior to 1914. My estimate here [fol. 874] for installing 6-inch mains is 75 cents, and for 4 inch mains it is 59 cents a foot. I did not compile any statistics to show the actual complete cost of installing any mains at any time prior to 1914 of the Brooklyn Union Company. I have a record showing the cost of installation excluding the pipe during the years prior to 1914. We keep such a record; but not with the organization cost or the insurance costs. They are not there. I know there are costs on the books that give the bare-bone costs of installing 6 inch mains prior to 1914 as prescribed by the Public Service Commission's system of accounts those costs are not included in that. I am familiar with the costs such as are shown by the records. They have come to my attention over a period of years. The extract from an exhibit compiled by our company showing the cost of installing mains from January 1901 to December, 1905 does not refresh my recollection as to the cost of installing six inch mains throughout that period. * * *

(Marked Defendants' Exhibit 26 for identification.)

[fol. 875] (Document was thereupon marked Defendants' Exhibit No. 27 for Identification.)

Our reproduction cost of mains as of January 1, 1914 was $1,868,298. There was also an estimate cost of remains. Eliminating disused main, I think we did, somewhere around that. Our reproduction cost for the services was $,1,868,298. There was also an estimate cost of reproduction of the meters made by me for the sum of $2,836,425. My cost per mile of main would be $6,482, assuming 1,013 miles. In round figures it would be $6,500. At that time I valued the mains which were in existence on October 1, 1919, but placed a valuation upon them by using unit prices of January 1, 1914. It is our recollection

on the subject at the moment that on October 1, 1919, we had 1,013 miles of mains, while to-day we have only 1,017 miles.

I have in my office underlying data upon which I made the appraisal of January 1, 1914. I have all the details there. * * *

[fol. 876] In a general way, I am familiar with the number of meters that we have installed in the last two or three years. The total meters that the Brooklyn Union installed in the system at 1914 was in the neighborhood of 514,000, in round figures. In 1923 the total meters in the system was 661,000, an increase of about 147,000 meters, and the average increase per year from 1914 to 1923 is between four and five per cent. Regarding the installation of meters, I would say offhand that the years of building activity subsequent to the War, which began in 1921 or 1922, up to the present time, would be rather larger in a [fol. 877] general way than the preceding years. That is a very rough statement and it is from my knowledge of the general activity, and entirely from memory. We have increased the pay of some of the men employed to install the meters. In 1921 we increased the compensation of the department, office clerks and inspectors approximately ten per cent. On January 1st, 1923, we increased the compensation of the inspectors and district foremen and clerks about eight per cent. That is in this department which handles the installation of meters. Not solely, they do many other things. Those are the increases in one branch of my department. We call it the Shop Distribution to distinguish it from the Street Department and to distinguish it from the meter repair department. You see, I have three lines which I gather together which I am the head of. Each line has a separate act or function to perform in the distribution system. That is, one branch repairs the meters and one has to do with unlocking, attending to complaints to consumers—that is, inside the house, general repair work, changing meters; that is taking them out and putting in another meter, for instance and work of that nature. The Street Department attends to the maintainance of the street system.

What I am talking about now is the Shop Distribution or the Shop Department, either term is correct. They look

[fol. 878] and unlock meters and attend to consumer's complaints, and do general work in regard to the maintenance of the system inside the building. The average number of employees in the Shop Distribution Department in 1922 was 380 and in 1923 it was 467. They also do work for the subsidiaries. In some cases the Shop Distribution Department installs the meters for the subsidiaries as well as our own.

The increase in employees in 1922 was 382 and in 1923 was 467. That is an average, the average number for the year There is an increase of 87. But in January, February and March of 1923, 142 of these men were laid off. 380 is the average, and the average for 1923 is 467. That average was lowered by these men being laid off in the first 3 months of 1923. Then we revert to our average of 467 which prevailed in 1923. Despite the fact that we laid off 142 in 1923 this is an average of only three months. We laid them off for good in the first three months of 1923, but we had an average of men employed in 1923 of 467. The appliance adjustments necessitated the employment of such a large number of employees. Their work had been completed; that is the reason we laid off so many. They were in the Shop Distribution Department. We gathered them there and turned them over to Mr. Atwood. The cost occasioned [fol. 879] by putting on that extra force was handled in a special way and turned over to the auditor. He will tell what account he placed it on. The fact that we were changing our appliances and had a large force of men to change our appliances would not cause any increase in our account called Gas Meter Installation. The expenditures of gas meter installation comes before me. It is made up under my supervision and I analyze the figures as they come to me. I am familiar with the cost over a few years. The cost of gas meter installation has increased for 1923 over the year 1922. There should be an increase, from memory, in those figures. I have not them before me; but there are reasons, by reason of the additional meters set and the increases of wages of the increase, approximately eight and a half per cent, which occurred in 1923. The increase there is attributable, if there is an increase—and from memory I think there is—to those other reasons, and also the fact of the slight increase in material in 1923 over 1922. There

has been some increase in material. All of those are factors which enter into the thing and will naturally increase the cost. I would not say it was an unusual increase in the number of installations of 1923 over 1922. To that ex- [fol. 880] tent I have not got the figure in my head. I have not studied it recently and I cannot retain everything in my head. The increase was just a normal increase in the installations, the cost would increase pro rata, depending what is meant pro rata. The factors that enter into the thing would be the increase in wages and the increase in material, plus the number of additional installations made. There ought to be more than 25 per cent increase because the other factors enter into that and add to the cost; that is the percentage of increase in wages and some little raise, possibly, in the increase in material. The account gas meter installation for the year 1922 was $22,538.24 and in 1923 was $62,955.21. Some of the large increases is due to the increase in wages and some is due in part only to the increase in the cost of material, and the remainder must be—I looked that thing up at the time, but I have not got it in the back of my head now. There is a very good explanation for it, but I cannot recall it. I would say offhand here that a larger number of installations, but I had rather refresh myself on it, because I dug into that at the time and I noticed that difference and I demanded an explanation for it and got the explanation. It was a good explanation, there was a good reason for it. But farther than that [fol. 881] at this time I do not care to go. The distribution superintendence expenses for the year 1922 were $343,530.28 and for the year 1923 $423,532.20. I can and I cannot explain that increase of approximately $80,000 or 25 per cent increase. There is some of that expense in distribution superintendence which relates to the transmission of gas outside of my sphere of activity, over which I have no supervision and nothing to do. We are obliged to carry these amounts in the manner that we do by the Public Service system of accounts. We, ourselves for the purpose of efficiency of operation separate the activities of transporting gas from holder to holder to the distribution system, and in that way, why, these things are merged. The explanation there is almost the same as I have given you before. I have dug into that and that part which relates to

our end of the figure that you quoted is easily explained, but I cannot remember what the explanation is at this moment. It is not complicated taken by itself, but for me to memorize all these things, with the variety of complications, and in the manner in which they are handled, why, it would be almost beyond a human being's ability to go on and explain this, that and the other thing, unless I refreshed my memory just before I came over. The item of distribution supplies and expenses in 1922 — $35,807.60 and [fol. 882] in 1923 it was $51,118.25. That is an increase of $16,000 in round figures, about a 50 per cent increase from the year 1922. The same condition occurs; I will give you the same answer on that one as on the previous two; and I shall have to dig into it in order to go into details. The tax report made by Plaintiff Company to the State Tax Commission for the year ending December 31, 1922 which is Defendant's Exhibit 28. I made up the compilation headed "Value of Mains in streets as of December 31, 1922." The first column shows the sizes and the second the number of feet in the ground and the third the cost per foot and the last column shows the value. The total value which I arrived at for 5,502,898 feet was given as $8,080,759.78. I then added 10 per cent for general contractor's expenses. On that result I added 12 per cent for overhead charges to cover interest, engineering, taxes and insurance during construction, reaching a total replacement value of $9,955,496.05. That is the value of the mains in the streets as of December 31, 1922, as reported by me to the State Tax Commission, in the manner prescribed by the Tax Commission. They tell me how to make it up. We sometimes send representatives to Albany to confer with them, and as a result of that conference these representatives report back [fol. 883] to me and I follow out the system as they report it is prescribed by the Tax Department at Albany to do and as they want it done. I arrive at a fair and just valuation for their purposes. What I have to say I don't need to rehearse with anyone.

Mr. Shea is one of the counsel for the Brooklyn Union Gas Company. When he goes out to get information and comes back, he advises me what to do along legal lines. Generally I follow those lines if they appeal to me as being

right in substance, without departing from what I know is a certain method of arriving at a conclusion.

I would not place an erroneous value on these mains just because Mr. Shea wanted me to. I put on the valuation in the manner that was prescribed by the Tax Department officials and bringing out, as far as I could, their ideas on the subject as it should be served up to them, and in this case, I am giving there, as near as it is humanly possible, the historical cost of these mains as they existed in the streets, including the disused mains because they occupy a part of the roadway, which in your case here I have excluded. There we include the disused mains—we are honest—because they occupy a part of the roadway, and we are willing to pay taxes on them, and without any idea of deceiving anybody, I say here in a footnote "no roadway pavement included. Cost are based on average of actual prices paid. Weight averages and eight hour day schedule is used." That is exactly the way they want it served up to them. In other words, these figures with which I am [fol. 884] now presented are prepared upon quite a different theory from that upon which my figures as shown in the exhibits in this case are made up. I used a theory here of giving the Court the weight of what it would cost to replace the mains and the services in the system of the Brooklyn Union Company, so that he, when he wanted to, could hold in his hand the dollars of what that cost, irrespective of the fact of whether it was reproduced or not, but what it would cost to replace at June 1st, 1923, and in his other hand he could hold the historical cost. In that way he could compare the two. The footnote states the historical cost. The costs are based on averages of actual prices paid. I do not think it can be anything else, as near as it can be arrived at than a historical cost. That is a historical cost as near as I can arrive at it, as near as anybody can arrive at it, meaning from 1895 down to December 31st, 1922, I took that period, actual weighted averages. In getting this up, I went through the books from the year 1895 down to date and got the actual prices paid for material and the actual prices paid for labor; and I did it personally; done under my supervision and direction. To get a weighted average, for instance, if we bought over a period of a year 50,000 tons of pipe and that pipe

actually cost us so much money; that is, you paid out for that pipe during that, say ten years, so much money, that money into your tonnage, actual tonnage purchased, gives you the weighted average. I also placed a valuation upon services there. My first column sets forth the sizes, and the number in the ground, second and third columns show [fol. 885] the cost per service, and the last shows the value. And the total number in the ground is 146,691 services which I valued at $2,879,489.09; then I added $75,368.17 for valves and roadway boxes, making a total of $2,953,857.26 to which I added ten per cent for general contractors' expenses, and then to that sum added 12 per cent for overhead charges to cover interest, engineering, taxes and insurance during construction, making a total replacement of the services in the ground as of December 31st, 1922 of $3,639,152.15.

(Defendants' Exhibit No. 28 offered for identification was marked in evidence.)

Nobody asked me to make up the estimate there in this Defendants' Exhibit No. 28. It is made up and handed to Mr. Paine when completed. It is part of the regular course of my duties here. I make it up as soon as *soon as* possible after the expiration of the calendar year; sometimes a month after. I have not in my office or no communication has ever been brought to my attention from the State Tax Commission as to the method of making up a tax report, in so far as my valuations are concerned. I am not very familiar with the report; only those parts that I am interested in—the distribution end, particularly the mains and services. I do not make up the report; the auditor does that. I only submit these figures to the auditor. I look at the report sometimes to look at my figures there that are attached. That is about all I use it for. I do not know what information they desire; I do not know anything about that except the information that I have from time to [fol. 886] asked a representative to go to Albany and ascertain for me. Someone came back and told me that they wanted it made up on the historical theory. That is the reproduction value of mains for 1914 amounts to $6,567,070, while the valuation in the State Tax Commission report, Exhibit No. 28, without the general contractor's

profit and without the overheads is $8,080,759.78. Except that, the two are not comparable to this extent; one has pavement in it; the other has not. Defendants' Exhibit No. 27 for identification has pavement in it, and Exhibit No. 28 in evidence of$8,080,759.78 has no pavement in it. That is, the higher figure has no pavement. * * *

[fol. 887] Brooklyn, New York, February 27th, 1924.

JOHN T. WHITE

Cross:

The mains of the Brooklyn Union Gas Company at the 1st day of June, 1923 amounted to 1,017 miles, excluding the disused mains. The total mileage of the streets in the Brooklyn Union territory in which there are used gas mains, amounts to 905 miles. The unused mains are excluded in [fol. 888] each instance. * * *

When I made my affidavit on June 4, 1923 in connection with the application of the Brooklyn Union Company for [fol. 889] a temporary injunction in this litigation, I estimated the reproduction cost as of January 1, 1923. That is my recollection. I have not with me the unit prices of material and labor which I used at that time. I appraised at that time many miles of mains, as indicated here 1,013.29. My estimate was $16,206,084. I included in my appraisal at that time 146,691 services. The estimate of $16,000,000 which I gave in answer to the question was my estimate on the reproduction cost of new mains, on January 1st, 1923. And the same as to services, reproduction cost new of [fol. 890] those services on January 1st, 1923. * * *

When I said 2,200 or 2,400 men, it just happened to be that way. If you take my labor and multiply my hours of labor of the different classifications, it will come out that we need about that number of men. No certain number of those men were men who could lay services because I haven't quoted any number in regard to services. I had no [fol. 891] plan in regard to what these 2,400 men would do. I expected that it would take that number of men to do that amount of work. I had no idea of constructing this with an imaginary force; as I said before, everybody in this room knows that we were not going to reconstruct this system,

that we had no intention of reconstructing the system. It was merely to get the units of labor and the units of material, and that is all there was to it. I have given you here our estimate, showing labor costs and material costs *and material costs*. In our labor costs I have shown what we would have to pay for our workmen laying our mains, likewise with regard to our cost for services, I have shown what we would have to pay or what I believed we would have to pay to reproduce the services. I was going to have certain men laying our mains who could do that work, and certain men laying our services who would be trained to lay services. I don't have to have that in mind. I have to have in mind the amount of time necessary to construct the complete unit, that is what I have to have in mind, I have got to have the men necessary to do that work, true, but I know what those men can do, and I know the time that it takes them to do it. I have had 38 years experience along that line, and I can tell you how long it takes to construct the services and how long it takes to construct a foot of main. As to how many men I would need to lay our 147 odd thou- [fol. 892] sand services and these 1,017 miles of mains within that two years would depend on computation of time of men that I have shown in the unit of prices, solely, and it would convey an approximate idea. I can not tell of the 2,200 men we had how many men we would set aside to lay services, unless I would go into a lengthy computation that would take two or three hours. I did not have to figure it out that way. If you know how much time it would take to put in a service, and how much time it would take to lay a foot of main in his territory for thirteen or fourteen years, that is guide enough for you, and that is the way I figure it. I had no idea when I was going to start to lay my services. I did not make a calculation as to when I was going to start the services or mains. I had no such scheme in mind that the mains and services lie entirely idle and no consumers would be served until after two years. I don't know whether the same men who installed the mains would also install the services, and for installing the mains there would be a unit of time. In installing mains and services, the same men do not do the same work. In laying mains through Spotless town, for instance, Crown Street and Carroll Street, some of those

mains were undoubtedly laid through some of those streets while buildings were being constructed. Some of the others were not, and some were laid in advance of the pavement which the City contemplated to put there, and for [fol. 893] economical reasons we put the mains down in adva-ce of the pavement, to save money to the consumers. In those cases where buildings were being constructed in those streets, we did it substantially at the same time we were laying our mains, also lay our service pipe with the same men. At substantially the same time we took advantage of an open trench. But there is gas in the mains when we do it. It is our practice when laying mains and services in this section which is being developed and where houses are going up, to lay our services at substantially the same time that we are laying our mains.

That data I have states the units of cost of material and labor which I adopted in my estimate of reproduction as of January 1st, 1923. The unit prices of materials and labors which are used in arriving at my reproduction cost of estimating the mains of the Brooklyn Union Gas Company as they existed on January 1st, 1923 are as follows: Inch and a quarter size, .8865; inch and a half size, .8902; two inch, .9850; three inch, $1.6002; four inch, $1.7841; six inch, $2.1841; eight inch, $2.7754; ten inch, $3.7071; twelve inch, $4.5332; sixteen inch, $6.3768; twenty inch, $8.7991; twenty-four inch, $11.2456; thirty-inch, $15.1438; thirty-six inch $19.7744; forty-two inch $25.2905.

Also the cost per service of services which I took in my appraisal of reproduction cost as of January 1st, 1923 [fol. 894] follows: Three quarter inch, $23.0372; one inch, $24.5923; inch and a quarter, $26.8680; inch and a half $28.3411; two inch, $32.4030; three inch, $68.2633; four inch, $83.0933; six inch, $125.5965; eight inch, $637.0931; twelve inch, $685.7962.

I did not at the time I made my affidavit on June 4, 1923, also include the amount of insurance, field supervision, office organization, storage of material and tools nor for pavement. For the mains is $1,084,589.92. That item of pavement was an item contemplating pavement only in the streets that were paved at the time the original pavements were laid, and excluding the pavement sub-

sequently laid. That is I adopted the same method of differentiation between paved and unpaved streets in the estimate of January 1st, 1923, that I adopted in the estimate of June 1st, 1923, except that I had to make this affidavit up in a hurry and I took my reproduction pavement which I had obtained in that manner on October 1, 1919, and just plussed the book increment, therefore that pavement that was in this January 1st, 1923 was less than the pavement that was in June 1st, 1923 because that was prepared more carefully. June 1st was prepared more carefully because I gathered all the facts together instead of just taking the book increment.

The amount I included for pavement disturbed over services in our January 1st, 1923 was $959,415.09. My appraisals as to mains and services of January 1st, 1923, [fol. 895] did not include a single solitary item for overhead expenses. That item I have sometimes called an organization item. I have used those words sometimes synonymously. In making up the figures for my affidavit on services, I used the same average length that I used here 41 feet. I am positive of that. That is the only way I go at it. I have been doing that for years. In making up my appraisal as of January 1st, 1923, 6-inch pipe is $56 a ton. And in my valuation of June 1st $69.90. From 6 to 42-inch was all $56 a ton. 3-inch pipe I took at $66.05 per net ton, 4-inch pipe I took at $60.25 per net ton. In my estimate of January 1st, 1923 the cost of labor for installing the main was $1.1608. Our estimate of June 1st, 1923 is in evidence, Exhibit No. 164. As to what I would have to pay for common labor in my estimate of January 1st, 1923, I took the rates that the company was paying. Labor was 52 cents an hour plus; yarners at 56 cents an hour plus; caulkers at 62 cents an hour; foremen at 72 cents an hour. Those were the rates of pay which the Brooklyn Union Company was paying January 1st, 1923. Those were not prices which were also being paid on June 1st, 1923. There had been some slight increase along that line. That is in evidence; I testified to it. The cost of the labor on 6-inch pipe on June 1st, 1923 is $1.1813, and my labor for January 1st, 1923 is $1.1608. There is a difference there of about two cents. On January 1st, my cost assumed

for common laborers was 52 cents an hour as against 62½ cents or ¾ cents on June 1st, 1923. It is an actual fact [fol. 896] that those differ- in the increased cost of our labor for June 1st, 1923 over that of January, 1923 increases our cost per foot only two cents. By spreading out the labor that is a result you get of that slight increase I made to reflect market conditions. Referring to Exhibit No. 165, which is my estimate of reproduction cost of services, I have given the cost of 8-inch services at $308,92—odd cents. 8-inch services at January 1st, 1923 were $637.093 as against $308. I can harmonize that very nicely. The eight inch service that I put in the cost of January 1st, 1923 was the actual cost of the installation of the eight inch service. We have but seven of them. In order to have this service tabulation reproduction cost as of June 1st, 1923, I took the eight inch service on a forty one foot basis, to have it all in harmony, and as a result of doing that I get a lower cost of the eight inch service, on June 1st, 1923 than on January 1st, 1923, because I took the actual cost; I modelled my $637 on the actual cost of the seven services put in, and I took the average cost of forty one feet lengths of the eight inch services that I used as of June 1st, 1923. I did reduce it. That applies to the 12-inch service figure for January 1st on the forty one foot basis. I took them all on June 1st on the 41-foot basis. Those seven services of the eight inch size were not installed at or around January 1st, 1923. They had been installed two or three years prior to that time at intervals down those two or three years.' [fol. 897] January 1st, 1923, I gave you the cost of, using the actual cost of the seven that were put in. I used the actual length of the service and the cost of its installation. As using it in that calculation, the market price of the material at January 1st, 1923, and that applies also to the two twelve inch services. With reference to the other sizes of services, I, in my allowance for field supervision, allowed there a general percentage which in my opinion is sufficient to cover engineering supervision, and I had in mind our compensation and the compensation of our subordinates, and the entire percentage, including the insurance, is around seven per cent. I have included in both

the material and labor cost per foot for mains and services an item of city inspection.

I have had city inspections during this kind of work from time to time, I might say, since I have been in the gas business. Over here in the early history of the company, we had a double inspection, we had City Inspectors from the Water Department and City Inspectors from the Highway Department. Due to the courage of his convictions that Mr. James H. Jourdan had, the chief engineer of the company, and who participated in the thing, we finally went to court and threw off this double inspection, and now we have but a single inspection, that inspection which is given by the Department of Highways. Prior to that time, we had it double. When I came to the Brooklyn Union Company [fol. 898] in 1910 there were city inspections then. I know during the time I was here there had been city inspections in Brooklyn; but I know prior to that in other companies I was engaged in, from consulting the records, I know that payments were made for city inspections prior to 1910, which is prior to the time of my coming here. It comes down the line as far as I could see, probably to 1895. I know that as a record, and for a fact during the time that I have been here. Prior to 1910, my information is gleaned from the records of payment. * * *

[fol. 899] I do not receive any salary from the subsidiary companies of the Brooklyn Union Gas Company.

A supplemental bill to Defendants' Exhibit 13 from the same company for the freight on that particular shipment is offered in evidence.

(Marked Plaintiff's Exhibit 173.)

Also in connection with Defendants' Exhibit No. 14, which is a bill from the United States Cast Iron & Pipe & Foundry Company, dated 11/5/23, a supplemental bill of the same date from the same company for the freight on the same shipment to clear up a similar notation upon Defendants' Exhibit 14.

(Marked Plaintiff's Exhibit 174.)